

KENTUCKY RETIREMENT SYSTEMS

TO: Members of the Board

FROM: William A. Thielen
Executive Director

DATE: December 3, 2015

SUBJECT: Affirmative Action Plan

Pursuant to Section 3.03 of the Kentucky Retirement Systems Personnel Policies, the Kentucky Retirement Systems has implemented an Affirmative Action Plan to promote and assure equitable treatment of all persons who are now employed, being considered for employment, seeking employment, and who will be recruited for employment in the future. The Kentucky Retirement Systems has already taken substantial steps towards fulfilling the requirements of the Affirmative Action Plan, as described in Section 3.03(3) of the Personnel Policy.

The Kentucky Retirement Systems provides periodic training to its leadership team to ensure compliance with federal and state laws. Such training covers harassment based on all legally protected categories (race, color, sex, religion, national origin, age, and disability), anti discrimination laws in general, and reasonable accommodation and inquiries under the ADA.

The Kentucky Retirement Systems continues to seek appropriate recruitment sources for females and minorities.

The current employment statistics for the Kentucky Retirement Systems show that as of September 30, 2015, there are 263 full-time employees. There are 160 female employees, representing 60.84% of the staff, and 26 employees who are members of minority groups, representing approximately 9.89% of the staff. Females make up 56.86% of the leadership positions in the Kentucky Retirement Systems, while employees who are members of minority groups hold 5.88% of the leadership positions in the Kentucky Retirement Systems.

In order to establish clear long term-hiring goals for minorities and females, Kentucky Retirement Systems will follow the goals provided by the Commonwealth of Kentucky's Personnel Cabinet. The current goal for minority employment in State Government is 12.2% through December 31, 2015.

RECOMMENDATION: This memorandum is presented for informational purposes only.

KENTUCKY RETIREMENT SYSTEMS

OVERALL AND MINORITY FULL TIME EMPLOYMENT
BY TYPE OF EMPLOYMENT AND DIVISION
AS OF SEPTEMBER 30, 2015

KRS AREA/DIVISION	KRS EMPLOYMENT CATEGORY											
	<u>LEADERSHIP</u>			<u>PROFESSIONAL</u>			<u>SUPPORT</u>			<u>TOTALS</u>		
	<u>Total</u>	<u>Minor.</u>	<u>(%)</u>	<u>Total</u>	<u>Minor.</u>	<u>(%)</u>	<u>Total</u>	<u>Minor.</u>	<u>(%)</u>	<u>Total</u>	<u>Minor.</u>	<u>(%)</u>
Executive Staff	5	0	0.0%	0	0	0.0%	2	0	0.0%	7	0	0.0%
Communications	1	0	0.0%	4	0	0.0%	0	0	0.0%	5	0	0.0%
Legal	3	1	33.3%	7	0	0.0%	6	0	0.0%	16	1	6.3%
Human Resources	1	0	0.0%	3	1	33.3%	0	0	0.0%	4	1	25.0%
Internal Audit	1	0	0.0%	2	1	50.0%	0	0	0.0%	3	1	33.3%
Administration	11	1	9.1%	16	2	12.5%	8	0	0.0%	35	3	8.6%
Accounting	3	0	0.0%	9	0	0.0%	0	0	0.0%	12	0	0.0%
Disability & Death	5	0	0.0%	18	1	5.6%	4	0	0.0%	27	1	3.7%
Employer Reporting Compliance & Education	3	0	0.0%	19	3	15.8%	0	0	0.0%	22	3	13.6%
Enterprise & Technology Services	6	0	0.0%	30	5	16.7%	5	0	0.0%	41	5	12.2%
Investments	3	0	0.0%	4	1	0.0%	1	0	0.0%	8	1	12.5%
Member Services	7	0	0.0%	35	3	8.6%	2	0	0.0%	44	3	6.8%
Membership Support	4	1	25.0%	20	1	5.0%	5	1	20.0%	29	3	10.3%
Procurement & Office Services	4	1	25.0%	0	0	0.0%	13	3	23.1%	17	4	23.5%
Retiree Health Care	3	0	0.0%	15	1	6.7%	2	0	0.0%	20	1	5.0%
Retiree Services (Payroll)	2	0	0.0%	6	2	33.3%	0	0	0.0%	8	2	25.0%
TOTALS	51	3	5.88%	172	19	11.05%	40	4	10.00%	263	26	9.89%

KENTUCKY RETIREMENT SYSTEMS

OVERALL AND MINORITY (FEMALE) FULL TIME EMPLOYMENT
BY TYPE OF EMPLOYMENT AND DIVISION
AS OF SEPTEMBER 30, 2015

KRS AREA/DIVISION

KRS EMPLOYMENT CATEGORY

	<u>LEADERSHIP</u>			<u>PROFESSIONAL</u>			<u>SUPPORT</u>			<u>TOTALS</u>		
	<u>Total</u>	<u>Female</u>	<u>(%)</u>	<u>Total</u>	<u>Female</u>	<u>(%)</u>	<u>Total</u>	<u>Female</u>	<u>(%)</u>	<u>Total</u>	<u>Female</u>	<u>(%)</u>
Executive Staff	5	2	40.0%	0	0	0.0%	2	2	100.0%	7	4	57.1%
Communications	1	1	100.0%	4	3	75.0%	0	0	0.0%	5	4	80.0%
Legal	3	2	66.7%	7	4	57.1%	6	6	100.0%	16	12	75.0%
Human Resources	1	1	100.0%	3	3	100.0%	0	0	0.0%	4	4	100.0%
Internal Audit	1	1	100.0%	2	2	100.0%	0	0	0.0%	3	3	100.0%
Administration	11	7	63.6%	16	12	75.0%	8	8	100.0%	35	27	77.1%
Accounting	3	2	66.7%	9	8	88.9%	0	0	0.0%	12	10	83.3%
Disability & Death	5	4	80.0%	18	15	83.3%	4	4	100.0%	27	23	85.2%
Employer Reporting Compliance & Education	3	2	66.7%	19	12	63.2%	0	0	0.0%	22	14	63.6%
Enterprise & Technology Services	6	2	33.3%	30	10	33.3%	5	1	20.0%	41	13	31.7%
Investments	3	0	0.0%	4	1	0.0%	1	1	0.0%	8	2	25.0%
Member Services	7	5	71.4%	35	18	51.4%	2	2	100.0%	44	25	56.8%
Membership Support	4	1	25.0%	20	10	50.0%	5	5	100.0%	29	16	55.2%
Procurement & Office Services	4	2	50.0%	0	0	0.0%	13	9	69.2%	17	11	64.7%
Retiree Health Care	3	3	100.0%	15	7	46.7%	2	2	100.0%	20	12	60.0%
Retiree Services (Payroll)	2	1	50.0%	6	6	100.0%	0	0	0.0%	8	7	87.5%
TOTALS	51	29	56.86%	172	99	57.56%	40	32	80.00%	263	160	60.84%

KENTUCKY RETIREMENT SYSTEMS

Board Meeting Public Participation Policy

The Kentucky Retirement Systems (KRS) Board of Trustees has adopted the following policies regarding public participation at meetings of the KRS Board:

1. Public comments may be allowed at meetings of the KRS Board of Trustees. Public comments will not be accepted at KRS Board committee meetings.
2. The Board shall only accept comments regarding items that are included on the meeting agenda.
3. Public comments will only be accepted during the portion of the meeting set aside for public comments. The portion of the meeting set aside for public comments, if any, will be noted on the agenda of each meeting.
4. The Board shall allot no more than a total of thirty (30) minutes for public comments at any regular or special meeting. No individual presentation shall exceed three (3) minutes. The Board Chair shall have the authority to limit or extend the amount of time for public or individual comments set forth in this section, unless determined by a majority vote of the full Board. Statements shall be timed by the Board Chair or designee and time limits will be strictly enforced.
5. A person who desires to speak to the Board shall register at the Board meeting room on the day of the meeting. Registration sheets shall customarily be available at least thirty (30) minutes prior to the scheduled start of the Board meeting, and registration shall close five (5) minutes before the scheduled start of the meeting. Required registration information shall include the name and address of the person providing the comments, the name of the organization (if any) the person represents, the topic(s) to be discussed, and, if the person is a pension system member, the name of the pension system in which the person participates.
6. Public comments are subject to the following rules:
 - a. A person who has registered to speak shall, at the appropriate time, be acknowledged by the Board Chair. The person shall state his/her first and last name before speaking and state the topic to be addressed.
 - b. Written comments may be submitted to the Board Chair by a speaker and copies shall be distributed to the full Board following the meeting.
 - c. No person may speak more than once on the same topic.
 - d. Comments shall be directed to the Board, not to individual Board members. Questions to the Board or individual board members will not be entertained.

- e. Statements shall not be abusive or argumentative. No profane or vulgar language will be tolerated.
5. The Board chair shall enforce these rules and may, subject to appeal to the full Board, take actions necessary to maintain order at the Board meeting. Such actions may include, but are not limited to:
- a. interrupting a person making a statement, if the statement is too lengthy, unduly repetitive or otherwise violates these rules; and
 - b. limiting the total amount of time devoted to public statements based on the number of persons wishing to make statements and the length of the Board's agenda.

KRS Medicare Eligible Plan

Drug List Changes

December 2015



Humana



Drug List Changes: What & Why?



- The drug list is updated on an annual basis to ensure placement of drugs in the most appropriate and cost effective tier in compliance with contracts and government regulations.
- Changes help ensure safety, control cost and mitigate the pharmacy trend. Here are a few reasons for change:
 - *The selection of available medications may change*
 - *New medications are introduced to the market*
 - *New generics become available as medications lose patents*
 - *Medications may gain new indications, have changes in dosing guidelines, or in prescribing recommendations*
 - *The price of a medication may change*

Drug List Changes: Prior Authorizations (PA)

- Prior authorization requires a physician to obtain pre-approval in order for Humana to provide coverage for a drug prescribed for a member.
- A few reasons for adding new prior authorizations:
 - **Generic or OTC now available**
 - **Adherence to strong safety warnings**
 - **Cost**
 - **Appropriate diagnosis & population (off-label use)**
- Example:
 - Praluent is a PCSK9 inhibitor which is an injectable biologic for the treatment of high cholesterol. It costs about \$14,000/year.
 - Praluent (alirocumab) is indicated as an adjunct to diet and maximally tolerated statin therapy for the treatment of adults with clinical atherosclerotic cardiovascular disease or familial hypercholesterolemia. The approved diagnoses must be confirmed by lab values, genetic confirmation, or cardiovascular event history.
 - Praluent is not indicated for primary prevention and has not been shown to reduce cardiovascular morbidity and mortality. It may only be used in members 18 and older.

Drug List Changes: Step Therapy (ST)

- Step-therapy is a requirement for members to try and fail a lower cost medicine or a “first line” medicine before another medicine will be approved for coverage.
- Sometimes the step-therapy requirement can be approved automatically by the system checking the prescription history, but sometimes communication between Humana and the prescriber/physician is required.
- Examples:
 - Lescol XL is a brand name medication for the treatment of high cholesterol. Approval requires previous therapy with one generic “statin” such as atorvastatin (generic for Lipitor) in Tier 1.
 - Statins are a class or category of cholesterol medicine. Lescol is fluvastatin.
 - The 35 current users will be grandfathered and will not be impacted by this Step Therapy, but it will apply to new members.

Drug List Changes: Tier Changes (TC)



- When a drug changes levels, the member will be responsible for paying the appropriate co-payment corresponding to the new level.
- Description of levels or “tiers”:
 - Tier 1 – Generic medications, lowest cost share
 - Tier 2 – Preferred Brands, medium cost share
 - Tier 3 – Non-preferred Brands, highest cost share
 - Tier 4 – Specialty (biologics or medications >\$600/month), also highest cost share
 - * Note: There are just a few generics in Tiers 2, 3, or 4 for various clinical and cost reasons
- Example:
 - Nexium (a brand name Proton Pump Inhibitor for GI conditions) is moving from Tier 2 to Tier 3 because esomeprazole is the generic equivalent and is in Tier 1.
 - There are also numerous OTC options for generic alternatives.
 - 1566 members are taking Nexium.

Drug List Changes: Not Covered (NC)

- If a drug is no longer covered on the prescription benefit, the member will have to pay out-of-pocket for it.
- This is often done for products that are obsolete (no longer made) or that are now OTC (over-the-counter).
- Example:
 - Phenazopyridine is a urinary analgesic that is only used for a few days along with an antibiotic for urinary tract infections. It is not on the CMS formulary file.
 - Six tablets of the prescription version can be purchased for \$5.99 with discount card and there is also an OTC product called Azo Standard.
 - 367 members filled it between July and September 2015, but this is not a maintenance medication.

Summary of 2016 Drug List Change Impact

JULY 1, 2015 - SEPTEMBER 27, 2015

Disruption	Change	Unique Mbrs	Rx Count	% Rx Count
NEGATIVE	NOT COVERED	515	639	0.13%
	TIER 2 TO TIER 3	617	1,023	0.20%
	TIER 2 TO TIER 3 AND PA	2,308	4,010	0.79%
	TIER 2 TO TIER 3 AND ST	1,111	1,599	0.32%
	TIER 3 TO TIER 4	4	5	0.00%
		4,555	7,276	1.44%
NEUTRAL	BUY UP	5,010	8,532	1.69%
	NEUTRAL	45,721	479,147	94.75%
	PART B	5,654	10,664	2.11%
		56,385	498,343	98.54%
POSITIVE	TIER 3 TO TIER 1	9	15	0.00%
	TIER 3 TO TIER 2	38	85	0.02%
		47	100	0.02%
			505,719	100.00%

Glossary

- **Drug List** – this is the formulary listing covered medications
- **Tier** – a level of benefit for categorizing drugs on the formulary
- **Prior Authorization (PA)** - requires a physician to obtain pre-approval in order for Humana to provide coverage for a drug prescribed for a member
- **Step-therapy (ST)** – requires members to try and fail a lower cost medicine or a “first line” medicine before another medicine will be approved for coverage
- **Tier Change (TC)** – a covered drug moves from one tier to a different tier
- **Not Covered (NC)** – a drug that is not covered under the prescription drug benefit
- **Buy-up** – drugs covered on a list of added benefits that are beyond standard Medicare coverage

Catastrophic Phase

Summary Reports

KRS Premium Plan

KRS Premium Members 2013 - September 2015 Members in Catastrophic Phase

Premium	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
2013	15	243	1015	2087
2014	53	500	1297	2540
<i>14 vs 13 Member Var</i>	<i>38</i>	<i>257</i>	<i>282</i>	<i>453</i>
<i>14 vs 13 Var %</i>	<i>253%</i>	<i>106%</i>	<i>28%</i>	<i>22%</i>
2015	60	611	1540	
<i>15 vs 14 Member Var</i>	<i>7</i>	<i>111</i>	<i>243</i>	
<i>15 vs 14 Var %</i>	<i>13%</i>	<i>22%</i>	<i>19%</i>	

KRS Essential Plan

KRS Essential Members 2013 - September 2015 Members in Catastrophic Phase

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
2013	6	15	31	55
2014	8	19	50	90
<i>14 vs 13 Member Var</i>	2	4	19	35
<i>14 vs 13 Var %</i>	33%	27%	61%	64%
2015	12	28	58	
<i>15 vs 14 Member Var</i>	4	9	8	
<i>15 vs 14 Var %</i>	50%	47%	16%	

MEMORANDUM

Date: November 10, 2015

To: Connie Davis
Director of Internal Audit

From: Karen Roggenkamp
Chief Operations Officer

Re: Financial Highlights – Quarter 1 FY 2016

KENTUCKY RETIREMENT SYSTEMS						
Net Position Comparison – Pension Fund (Period Ending September 30, 2015)						
	KERS	KHAZ	CERS	CHAZ	SPRS	TOTAL
FY 16 Net Position (NP)	\$2,159,751,207	\$521,711,406	\$6,044,459,413	\$1,965,007,739	\$229,259,971	\$10,920,189,736
FY 2015 End of Period (6/30/2015)	\$2,327,783,171	\$552,467,903	\$6,440,799,858	\$2,078,201,686	\$247,227,583	\$11,646,480,202
Change in Net Position	(\$168,031,964)	(\$30,756,497)	(\$396,340,445)	(\$113,193,948)	(\$17,967,613)	(\$726,290,466)

Total Pension Net Assets were \$11.65 Billion at the beginning of Fiscal Year (FY) 2016 and decreased by 6.24% to \$10.92B at September 30, 2015. The decrease of \$726.3 Million was comprised of the following:

- Total **Contributions** were \$310 Million (\$13.4M less than same period last year) due to a decrease in service purchases (impact SB2 Changes making it less advantageous to purchase time) and the one-time \$23M Bank of American settlement recorded in the 1st Quarter of last year.
- Overall **Investment Income** was negative \$548M compared to a negative \$166M reported for the 1st Quarter of last year. The major drivers of the decline in Investment Income were:
 - The net appreciation in the Fair Value (FV) of Investments was negative \$565.5M compared to a negative \$232.3M same period last year. The Q1 FY 2016 Pension Investment performance was -4.80% compared to -1.41%. The primary driver of the decline in FV were unrealized losses experienced within the Non US and Large Cap US Public Equity portfolios, having a combined unrealized loss of \$361M.
- Although the decline in FV of Investments points to the Non US and Large Cap US Public Equity portfolios, it is important to note the decline in Fixed Income which is primarily due to unrealized losses experienced in the High Yield Fixed Income. In addition, fixed income had a reduction in TIPS to help fund Real Estate.
- Interest and Dividends earned during this reporting period declined by \$35.5M from prior year to \$41.3M. While less income was received across all asset classes, the largest decline was caused by reduced partnership income from Private Equity and Absolute Return investment performance.
- Derivatives used by individual managers were able to assist in gaining some ground as the hedging investments offset the strong USD.
- Investment expenses were \$24.9M compared to \$11.3M for the prior reporting period. Although this appears to be an expense increase, the difference is attributable to the reporting transparency change made in January 2015 to record all

fees in Investment Expense. This change included fees related to Private Equity investments, which were netted against Investment assets in Q1 of last year. Normalized expenses would be comparable between reporting periods.

- Total **Deductions** were \$488.5m (an increase of \$14.4M). Benefits/Refunds totaled \$478M. The 3.3% increase was comparable to prior years. Administrative expenses were \$10.4M (\$0.5M lower than same period last year).

KENTUCKY RETIREMENT SYSTEMS						
Net Position Comparison – Insurance Fund (Period Ending September 30, 2015)						
	KERS	KHAZ	CERS	CHAZ	SPRS	TOTAL
FY 16 Net Position (NP)	\$632,617,056	\$416,726,669	\$1,821,592,794	\$1,005,987,885	\$156,109,704	\$4,033,034,108
FY 2015 End of Period (6/30/2015)	\$665,637,927	\$439,112,712	\$1,920,944,927	\$1,056,480,313	\$164,714,559	\$4,246,890,439
Change in Net Position	(\$33,020,871)	(\$22,386,043)	(\$99,352,133)	(\$50,492,429)	(\$8,604,855)	(\$213,856,330)

Total Insurance Net Assets were \$4.25 Billion at the beginning of Fiscal Year (FY) 2016 and decreased by 5.0% to \$4.03 Billion for the period ending September 30, 2015. The decrease of \$213.9 Million was comprised of the following:

- Total **Contributions** were \$84.2M for the 1st Quarter compared to \$84.8M for the same period last year. The change was due to a decrease in required employer contributions across all plans, but partially offset by higher retired reemployed contributions of \$2.6M (increased by 43%) over 1st Q last year.
- Overall **Investment Income** was negative \$210.6M compared to negative \$60.7M for the same period last year. The major drivers of Investment Income were:
 - The net appreciation in the FV of Investments was negative \$216.8M compared to negative \$78.2M last period. The Q1 Insurance Trust Investment performance was -4.97% compared to -1.46% for Q1 last year. The primary driver of this decline in FV was large unrealized losses experienced within the Non US and Large Cap US Public Equity portfolios having a combined unrealized loss of \$136M.
- Although the decline in FV of Investments points to the Non US and Large Cap US Public Equity portfolios, it is important to note the decline in Fixed Income which is primarily due to unrealized losses experienced in the High Yield Fixed Income. In addition, fixed income had a reduction in TIPS to help fund Real Estate.
- Interest and Dividends were \$14.5M (decrease of \$6.9M from the prior year). While less income was received across all asset classes, the largest decline was a result in reduced partnership income from Private Equity and Absolute Return.
- The Insurance Fund was able to gain some ground through Derivatives used by individual managers as the hedging investments offset the strong USD and the positive performance within the Private Equity Class.
- Investment expenses were \$8.4M compared to \$4.4M same reporting period last year. Although this appears to be an expense increase, the difference is attributable to the reporting transparency change in January of 2015 to record all fees in Investment Expense. This change included Private Equity Investment fees, which were netted against Investment assets. Normalized expenses would be comparable between reporting periods.
- Total **Deductions** were \$87.8M (higher by \$15.4M compared to same period last year). Healthcare premiums accounted for \$14.6 M of the increase. Self Funded Healthcare administrative expenses of \$1.6M were paid for retirees unable to participate in the Humana Medicare Advantage plans due to slightly higher claims.

KENTUCKY RETIREMENT SYSTEMS
COMBINING STATEMENTS OF NET POSITION
PENSION FUNDS
As of September 30, 2015
(Unaudited)(In Whole Dollars)

	KERS	CERS	SPRS	CHAZ	KHAZ	2016	2015	
ASSETS								
Cash and Short-term Investments								
Cash Deposits	\$2,240,981	\$531,852	\$206,001	\$615,263	\$40,080	\$3,634,178	\$3,324,388	9%
Short-term Investments	\$89,152,389	\$170,512,911	\$8,486,853	\$69,752,732	\$22,703,667	\$360,608,552	\$281,608,054	28% 1
Total Cash and Short-term Investments	\$91,393,370	\$171,044,763	\$8,692,855	\$70,367,994	\$22,743,748	\$364,242,730	\$284,932,442	
RECEIVABLES								
Accounts Receivable	\$58,444,468	\$36,893,276	\$9,864,625	\$15,327,967	\$5,471,214	\$126,001,549	\$131,616,058	-4%
Accounts Receivable - Investments	\$51,994,283	\$149,584,361	\$5,404,503	\$48,289,211	\$12,739,310	\$268,011,668	\$734,076,851	-63% 2
Accounts - Alternate Participation				\$101,245		\$101,245	\$107,629	-6%
Total Receivables	\$110,438,750	\$186,477,637	\$15,269,128	\$63,718,423	\$18,210,524	\$394,114,462	\$865,800,537	
INVESTMENTS, AT FAIR VALUE								
Fixed Income	\$506,193,631	\$1,367,803,628	\$45,157,749	\$441,029,101	\$113,512,445	\$2,473,696,554	\$2,958,488,357	-16% 3
Public Equities	\$816,222,466	\$2,737,230,389	\$98,981,626	\$877,258,856	\$225,404,012	\$4,755,097,350	\$5,170,766,656	-8%
Private Equities	\$331,951,690	\$666,085,642	\$26,997,962	\$222,583,737	\$64,555,878	\$1,312,174,909	\$1,343,200,632	-2%
Derivatives	\$2,580,818	\$6,978,440	\$262,808	\$2,243,686	\$581,274	\$12,647,026	\$4,774,422	165% 4
Absolute Return	\$228,650,177	\$665,494,134	\$24,459,078	\$211,007,490	\$56,090,631	\$1,185,701,511	\$1,302,729,862	-9%
Real Estate	\$112,086,503	\$357,350,443	\$13,884,430	\$114,912,197	\$32,291,752	\$630,525,324	\$467,127,974	35% 5
Total Investments, at Fair Value	\$1,997,685,285	\$5,800,942,676	\$209,743,653	\$1,869,035,068	\$492,435,991	\$10,369,842,673	\$11,247,087,904	
FIXED/INTANGIBLE ASSETS								
Fixed Assets	\$824,547	\$1,523,100	\$8,845	\$138,126	\$82,433	\$2,577,051	\$2,569,251	0%
Intangible Assets	\$5,919,584	\$9,960,922	\$100,005	\$826,734	\$493,581	\$17,300,826	\$16,254,290	6%
Accumulated Depreciation	(\$769,806)	(\$1,419,085)	(\$8,451)	(\$128,481)	(\$76,749)	(\$2,402,572)	(\$2,359,259)	2%
Accumulated Amortization	(\$2,774,006)	(\$4,597,889)	(\$54,756)	(\$384,712)	(\$221,751)	(\$8,033,113)	(\$6,342,276)	27% 6
Total Fixed Assets	\$3,200,319	\$5,467,049	\$45,642	\$451,667	\$277,514	\$9,442,191	\$10,122,007	-7%
Total Assets	\$2,202,717,725	\$6,163,932,124	\$233,751,277	\$2,003,573,152	\$533,667,777	\$11,137,642,055	\$12,407,942,890	
LIABILITIES								
Accounts Payable	\$2,483,683	\$4,488,933	\$336,115	\$1,286,242	\$2,105,758	\$10,700,732	\$9,889,629	8%
Investment Accounts Payable	\$40,482,834	\$114,983,776	\$4,155,201	\$37,279,171	\$9,850,615	\$206,751,597	\$698,788,142	-70% 7
Total Liabilities	\$42,966,518	\$119,472,709	\$4,491,317	\$38,565,413	\$11,956,373	\$217,452,329	\$708,677,772	
Total Plan Net Assets	\$2,159,751,207	\$6,044,459,416	\$229,259,961	\$1,965,007,739	\$521,711,404	\$10,920,189,726	\$11,699,265,118	

NOTE - Variance Explanation

- 1 Short Term Investments is primarily comprised of the cash that is on hand with the custodial bank along with any small amounts of cash managers and brokers may have; therefore, the variance is driven by cash flow
- 2 Variance is a result of transactions activity which is based on each individual manager
- 3 Reduction in TIPS as well as unfavorable market conditions within the High Yield Fixed Income
- 4 Derivatives include currency forwards/futures as permitted by KRS investment policy. Derivative income increases as the hedging investment offsets the strong USD.
- 5 Real Estate experienced substantial growth as it was one of the best performing classes in FY 2015
- 6 Capitalization of START Project.
- 7 Variance is a result of transactions activity which is based on each individual manager

KENTUCKY RETIREMENT SYSTEMS
COMBINING STATEMENTS OF CHANGES IN NET POSITION
PENSION FUNDS
As of September 30, 2015
(Unaudited)(In Whole Dollars)

	KERS	CERS	SPRS	CHAZ	KHAZ	2016	2015	
ADDITIONS								
Member Contributions	\$25,779,386	\$28,603,962	\$1,201,827	\$12,404,371	\$3,573,844	\$71,563,389	\$69,341,847	3%
Employer Contributions	\$130,538,015	\$62,975,340	\$6,795,488	\$27,468,392	\$6,833,896	\$234,611,131	\$228,304,448	3%
Pension Spiking Contributions	\$86,291	\$204,383	\$14,669	\$476,773	\$12,011	\$794,127	\$207,106	283% 1
Bank of America Settlement							\$23,000,000	
Health Insurance Contributions (HB1)	\$1,143,865	\$1,585,570	\$29,166	\$345,161	\$167,386	\$3,271,147	\$2,747,688	19% 2
Total Contributions	\$157,547,557	\$93,369,254	\$8,041,151	\$40,694,697	\$10,587,136	\$310,239,794	\$323,601,089	
INVESTMENT INCOME								
From Investing Activities								
Net Appreciation in FV of Investments	(\$93,191,678)	(\$329,477,213)	(\$12,362,830)	(\$103,688,010)	(\$26,802,581)	(\$565,522,312)	(\$232,331,383)	143% 3
Interest/Dividends	\$7,654,072	\$23,301,766	\$828,758	\$7,520,933	\$1,998,732	\$41,304,261	\$76,814,161	-46% 4
Total Investing Activities Income	(\$85,537,606)	(\$306,175,447)	(\$11,534,072)	(\$96,167,077)	(\$24,803,849)	(\$524,218,051)	(\$155,517,222)	
Investment Expense								
Investment Expense	\$4,531,394	\$14,097,634	\$477,971	\$4,553,512	\$1,226,504	\$24,887,014	\$11,260,499	121% 5
Net Income from Investing Activities	(\$90,069,000)	(\$320,273,081)	(\$12,012,043)	(\$100,720,589)	(\$26,030,353)	(\$549,105,065)	(\$166,777,721)	229%
From Securities Lending Activities								
Securities Lending Income	\$222,108	\$654,738	\$23,167	\$210,418	\$54,714	\$1,165,146	\$841,021	39%
Securities Lending Expense								
Securities Lending Borrower Rebates	\$2,709	(\$48,797)	(\$2,022)	(\$15,767)	(\$3,745)	(\$67,622)	\$161,479	-142%
Security Lending Agent Fee	\$24,464	\$81,491	\$2,895	\$26,137	\$6,700	\$141,687	\$64,343	120%
Security Lending Commission Expense								
Net Income from Securities Lending	\$194,935	\$622,044	\$22,295	\$200,049	\$51,759	\$1,091,081	\$615,199	77% 6
Total Investment Income	(\$89,874,065)	(\$319,651,037)	(\$11,989,748)	(\$100,520,540)	(\$25,978,594)	(\$548,013,984)	(\$166,162,522)	
Total Additions	\$67,673,492	(\$226,281,783)	(\$3,948,597)	(\$59,825,843)	(\$15,391,458)	(\$237,774,190)	\$157,438,567	
DEDUCTIONS								
Benefit Payments	\$228,820,909	\$159,818,645	\$13,958,195	\$52,130,783	\$14,474,184	\$469,202,717	\$452,546,493	4%
Refunds	\$3,380,380	\$4,075,894	\$2,689	\$784,340	\$593,562	\$8,836,865	\$10,583,896	-17% 7
Administrative Expenses	\$3,465,822	\$6,099,857	\$57,281	\$447,487	\$294,107	\$10,364,554	\$10,940,695	-5%
Capital Project Expenses	\$38,343	\$64,265	\$851	\$5,495	\$3,186	\$112,140		
Total Deductions	\$235,705,455	\$170,058,662	\$14,019,016	\$53,368,105	\$15,365,039	\$488,516,276	\$474,071,084	
Net Increase(Decrease) in Plan Net Assets	(\$168,031,964)	(\$396,340,445)	(\$17,967,613)	(\$113,193,948)	(\$30,756,497)	(\$726,290,466)	(\$316,632,517)	
PLAN NET ASSETS HELD IN TRUST FOR PENSION BENEFITS								
Beginning of Period	\$2,327,783,171	\$6,440,799,858	\$247,227,583	\$2,078,201,686	\$552,467,903	\$11,646,480,202	\$12,015,897,645	
End of Period	\$2,159,751,207	\$6,044,459,413	\$229,259,971	\$1,965,007,739	\$521,711,406	\$10,920,189,736	\$11,699,265,127	

NOTE - Variance Explanation

- 1 The first Pension Spiking invoices ran 09/2014, therefore FY15 has only one month of invoices compared to FY16 with 3 months.
- 2 The increase in Health Insurance Contributions is due to the increase in the number of employees contributing to HIC
- 3 The decrease in the Net Appreciation in FV of Investments is primarily due to the Unrealized Loss within Public Equity, primarily from the Non US and Large Cap having unrealized loss of \$362 million.
- 4 The decrease in Interest/Dividends are result of a reduction in Partnership Income within the Real Return, Private Equity and Absolute Return
- 5 The increase in Manager Fees is a result of KRS requiring more transparent reporting for Private Equity Managers. In January 2015, KRS began working with Private Equity Managers to begin reporting all fees. The first half of FY 2015 most Private Equity

KENTUCKY RETIREMENT SYSTEMS
COMBINING STATEMENTS OF NET POSITION
INSURANCE FUNDS
As of September 30, 2015
(Unaudited)(In Whole Dollars)

	KERS	CERS	SPRS	CHAZ	KHAZ	2016	2015	
ASSETS								
Cash and Short-Term Investments								
Cash Deposits	\$264,560	\$587,281	\$12,397	\$28,708	\$34,250	\$927,198	\$997,584	-7%
Short-term Investments	\$20,610,040	\$28,794,303	\$4,087,746	\$24,136,752	\$8,558,846	\$86,187,687	\$87,161,934	-1%
Medicare Drug Deposit							\$100,051	
Total Cash and Short-term Investments	\$20,874,600	\$29,381,585	\$4,100,143	\$24,165,460	\$8,593,096	\$87,114,884	\$88,259,570	
RECEIVABLES								
Accounts Receivable	\$12,584,531	\$10,008,093	\$947,441	\$6,070,950	\$1,504,185	\$31,115,200	\$30,733,042	1%
Investment Accounts Receivable	\$15,145,489	\$43,921,007	\$3,775,243	\$24,202,873	\$10,130,215	\$97,174,827	\$285,656,599	-66% 1
Total Receivables	\$27,730,020	\$53,929,099	\$4,722,684	\$30,273,824	\$11,634,399	\$128,290,026	\$316,389,641	
INVESTMENTS, AT FAIR VALUE								
Fixed Income	\$195,989,569	\$579,708,251	\$48,495,038	\$317,038,280	\$131,462,510	\$1,272,693,648	\$1,441,505,704	-12% 2
Public Equities	\$254,910,198	\$699,611,465	\$58,189,794	\$379,093,351	\$164,618,612	\$1,556,423,419	\$1,628,431,967	-4%
Derivatives	\$725,585	\$2,132,687	\$182,369	\$1,156,350	\$491,064	\$4,688,054	\$1,180,474	297% 3
Private Equities	\$40,291,175	\$184,628,745	\$16,441,473	\$103,020,732	\$36,178,296	\$380,560,422	\$305,977,495	24% 4
Absolute Return	\$69,590,320	\$201,565,740	\$17,666,017	\$112,764,379	\$46,892,637	\$448,479,092	\$443,539,427	1%
Real Estate	\$34,825,866	\$106,154,385	\$9,357,452	\$57,977,383	\$25,003,094	\$233,318,179	\$169,924,411	37% 5
Total Investments, at Fair Value	\$596,332,713	\$1,773,801,273	\$150,332,143	\$971,050,474	\$404,646,212	\$3,896,162,814	\$3,990,559,478	
Total Assets	\$644,937,333	\$1,857,111,956	\$159,154,970	\$1,025,489,758	\$424,873,708	\$4,111,567,725	\$4,395,208,689	
LIABILITIES								
Accounts Payable	\$211,694	\$200,929	\$16,082	\$91,124	\$24,122	\$543,951	\$191,662	184% 6
Investment Accounts Payable	\$12,108,573	\$35,318,233	\$3,029,185	\$19,410,749	\$8,122,916	\$77,989,656	\$289,011,310	-73% 7
Total Liabilities	\$12,320,267	\$35,519,161	\$3,045,267	\$19,501,874	\$8,147,039	\$78,533,607	\$289,202,972	
Total Plan Net Assets	\$632,617,066	\$1,821,592,795	\$156,109,703	\$1,005,987,885	\$416,726,669	\$4,033,034,118	\$4,106,005,717	

NOTE - Variance Explanation

- 1 Variance is a result of transactions activity which is based on each individual manager
- 2 Reduction in TIPS as well as unfavorable market conditions within the High Yield Fixed Income
- 3 Derivatives include currency forwards/futures as permitted by KRS investment policy. Derivative income increases as the hedging investment offsets the strong USD.
- 4 The Increase in Private Equity is due to the addition of new managers solely for the Insurance Fund
- 5 Real Estate experienced substantial growth as it was one of the best performing classes in FY 2015
- 6 Admin Expense payable recorded quarterly instead of annually
- 7 Variance is a result of transactions activity which is based on each individual manager

KENTUCKY RETIREMENT SYSTEMS
COMBINING STATEMENTS OF CHANGES IN NET POSITION
INSURANCE FUNDS
As of September 30, 2015
(Unaudited)(In Whole Dollars)

	KERS	CERS	SPRS	CHAZ	KHAZ	2016	2015		
ADDITIONS									
Employer Contributions	\$33,349,052	\$24,001,874	\$2,772,750	\$17,290,357	\$3,980,559	\$81,394,593	\$82,796,330	-2%	
Insurance Premiums	\$67,203	\$176,513		\$849	\$3,572	\$248,136	\$210,811	18%	1
Retired Reemployed Healthcare	\$975,699	\$1,219,466	\$2,126	\$214,949	\$192,799	\$2,605,039	\$1,821,408	43%	2
Total Contributions	\$34,391,954	\$25,397,853	\$2,774,876	\$17,506,155	\$4,176,930	\$84,247,767	\$84,828,548		
INVESTMENT INCOME									
From Investing Activities									
Net Appreciation in FV of Investments	(\$36,635,461)	(\$96,920,489)	(\$8,099,792)	(\$52,143,297)	(\$22,958,400)	(\$216,757,438)	(\$78,192,351)	177%	3
Interest/Dividends	\$2,293,114	\$6,597,906	\$549,737	\$3,589,699	\$1,500,179	\$14,530,636	\$21,468,628	-32%	4
Total From Investing Activities	(\$34,342,346)	(\$90,322,583)	(\$7,550,054)	(\$48,553,598)	(\$21,458,220)	(\$202,226,802)	(\$56,723,722)		
Investment Expense	\$796,300	\$4,119,022	\$340,102	\$2,313,855	\$786,783	\$8,356,063	\$4,405,721	90%	5
Net Income from Investing Activities	(\$35,138,647)	(\$94,441,605)	(\$7,890,156)	(\$50,867,453)	(\$22,245,003)	(\$210,582,865)	(\$61,129,443)		
From Securities Lending									
Securities Lending Income	\$56,578	\$163,853	\$13,707	\$90,524	\$37,583	\$362,246	\$272,816		
Securities Lending Expense									
Security Lending Borrower Rebates	(\$953)	(\$1,146)	(\$176)	(\$224)	(\$484)	(\$2,983)	(\$142,129)		
Security Lending Agent Fees	\$6,638	\$18,944	\$1,585	\$10,409	\$4,380	\$41,956	\$18,117		
Net Income from Securities Lending	\$50,893	\$146,056	\$12,298	\$80,339	\$33,687	\$323,272	\$396,829	-19%	6
Total Net Income from Investments	(\$35,087,753)	(\$94,295,550)	(\$7,877,859)	(\$50,787,115)	(\$22,211,317)	(\$210,259,593)	(\$60,732,614)		
Total Additions	(\$695,800)	(\$68,897,697)	(\$5,102,983)	(\$33,280,960)	(\$18,034,387)	(\$126,011,826)	\$24,095,934		
DEDUCTIONS									
Healthcare Premiums Subsidies	\$31,547,353	\$29,287,349	\$3,480,723	\$17,085,852	\$4,315,040	\$85,716,317	\$71,077,787	21%	7
Administrative Expense	\$208,049	\$179,833	\$16,094	\$85,556	\$24,140	\$513,673			
Self Funded Healthcare Costs	\$566,712	\$981,704	\$5,014	\$39,840	\$12,340	\$1,605,611	\$1,404,019	14%	8
Excise Tax Insurance	\$2,958	\$5,549	\$42	\$220	\$135	\$8,904	\$9,194	-3%	
Total Deductions	\$32,325,072	\$30,454,435	\$3,501,872	\$17,211,469	\$4,351,656	\$87,844,504	\$72,491,000		
Net Increase(Decrease) in Plan Net Assets	(\$33,020,871)	(\$99,352,133)	(\$8,604,855)	(\$50,492,429)	(\$22,386,043)	(\$213,856,330)	(\$48,395,066)		
NET PLAN ASSETS HELD IN TRUST FOR INSURANCE BENEFITS	\$665,637,927	\$1,920,944,927	\$164,714,559	\$1,056,480,313	\$439,112,712	\$4,246,890,439	\$4,154,400,773		
	\$632,617,056	\$1,821,592,794	\$156,109,704	\$1,005,987,885	\$416,726,669	\$4,033,034,108	\$4,106,005,707	-2%	

NOTE - Variance Explanation

- 1 The increase in Insurance Premiums is due to an Increase in retirees
- 2 The increase in Retired Re-employed Healthcare is due to an Increase in retired re-employed members
- 3 The decrease in the Net Appreciation in FV of Investments is primarily due to the Unrealized Loss within Non US and Large Cap sectors of Public Equity having unrealized losses of \$136 million.
- 4 The decrease in Interest/Dividends are result of a reduction in Partnership Income within the Real Return, Private Equity and Absolute Return
- 5 The increase in Manager Fees is a result of KRS requiring more transparent reporting for Private Equity Managers. In January 2015, KRS began working with Private Equity Managers to begin reporting all fees. The first half of FY 2015 most Private Equity fees were netted giving the appearance of a large increase in fees for the first half of FY 2016.
- 6 Securities Lending Activity varies depending on the demands of the market
- 7 The increase in Healthcare Premiums Subsidies is due to an increase in premiums paid due to an increase in retirees
- 8 The increase in Self Funded Healthcare Costs is a direct result of an increase in claims from self funded retirees

KENTUCKY RETIREMENT SYSTEMS

TO: Members of the Board

FROM: William A. Thielen
Executive Director

DATE: December 3, 2015

SUBJECT: KERS Nonhazardous and SPRS – Actuarial Rate of Return Assumption Recommendation

Accompanying this memorandum you will find for your review the PowerPoint presentation that Todd Green and Alisa Bennett, our actuaries from Cavanaugh Macdonald, will use to present a new recommendation to the KRS Board regarding the actuarial assumed rate of return that should apply to the KERS nonhazardous and SPRS plans. This recommendation is being made in light of the asset allocation recommendation for these two plans made recently by RV Kuhns. The recommended asset allocation for these two plans is expected to achieve an investment rate of return that is below the current 7.5% assumed rate of return.

RECOMMENDATION: The Executive Director recommends that the Board adopt the assumed rate of return recommendations made by the KRS actuary.



**Kentucky Employees' Retirement System
Review of Assumed Rate of Return for
KERS Non-Hazardous and SPRS Pension Funds**

December 3, 2015



Assumed Investment Return

- Assumption reviewed
 - Investment return
- Actuarial Standard of Practice (ASOP) No. 27, “*Selection of Economic Assumptions for Measuring Pension Obligations*” provides guidance to actuaries in selecting economic assumptions for measuring obligations under defined benefit plans.
- According to RVK... “The current funded ratios and forecasted payout ratios for KERS Non-Hazardous Pension and the State Police Pension Plans merit distinct asset allocations plans that increase liquidity and mitigate downside volatility, which may challenge the ability to achieve 7.50% actuarial return”
- Current Assumption

Item	Current
Price Inflation	3.25%
Real Rate of Return	<u>4.25%</u>
Investment Return	7.50%



Assumed Investment Return

NASRA Issue Brief: Public Pension Plan Investment Return Assumption



The average assumed rate of return among Public Retirement Systems is 7.68% according to the May 2015 NASRA Issue Brief: “Public Pension Plan Investment Return Assumptions”



Capital Market Assumptions

- Provided by RVK in Kentucky Retirement System Pension Plans – KERS, CERS, SPRS Asset Allocation Discussion
 - Expected Return, Standard Deviation and Correlation Coefficients

Asset Class	Real Return	Standard Deviation
Global Equity	5.30%	18.35%
Int. Duration Fixed Income	1.00%	6.00%
Custom KRS Fixed Income	3.33%	10.79%
Core Real Estate	4.25%	12.50%
Diversified Hedge Funds	4.00%	9.50%
Private Equity	8.00%	26.00%
Diversified Inflation Strategy	3.15%	11.45%
Cash Equivalent	-0.25%	3.00%



Capital Market Assumptions



➤ Correlation Coefficients

	Global Equity	Int. Dur. Fixed	Custom KRS Fixed Income	Core Real Estate	Diversified Hedge Funds	Private Equity	Div. Inflation Strategy	Cash Equivalents
Global Eq.	1.00	-0.02	0.84	0.32	0.70	0.78	0.72	-0.05
Int. Dur. Fixed Inc.	-0.02	1.00	0.28	-0.06	0.12	-0.26	0.22	0.24
Custom KRS Fixed Income	0.84	0.28	1.00	0.27	0.69	0.66	0.82	-0.07
Core Real Estate	0.32	-0.06	0.27	1.00	0.24	0.60	0.37	0.14
Diversified Hedge Funds	0.70	0.12	0.69	0.24	1.00	0.69	0.59	0.22
Private Equity	0.78	-0.26	0.66	0.60	0.69	1.00	0.62	0.07
Div. Infl. Strategy	0.72	0.22	0.82	0.37	0.59	0.62	1.00	-0.03
Cash Equivalents	-0.05	0.24	-0.07	0.14	0.22	0.07	-0.03	1.00



Capital Market Assumptions



- Asset Allocation
- KERS Non-Hazardous Pension Fund

Asset Class	Recommended Asset Allocation %
Global Equity	50%
Int. Duration Fixed Income	11%
Custom KRS Fixed Income	11%
Core Real Estate	5%
Diversified Hedge Funds	10%
Private Equity	2%
Diversified Inflation Strategies	8%
Cash Equivalent	3%



Capital Market Assumptions



- Asset Allocation
- SPRS Pension Fund

Asset Class	Recommended Asset Allocation %
Global Equity	54%
Int. Duration Fixed Income	9%
Custom KRS Fixed Income	9%
Core Real Estate	5%
Diversified Hedge Funds	10%
Private Equity	2%
Diversified Inflation Strategies	8%
Cash Equivalent	3%



Economic Assumptions Investment Return



- Stochastic projection expected range of real rates of return (KERS Non-Hazardous)

Time Span In Years	Real Returns by Percentile				
	5 th	25 th	50 th	75 th	95 th
1	-14.73%	-4.44%	3.43%	11.95%	25.46%
5	-5.13%	-0.17%	3.43%	7.16%	12.76%
10	-2.70%	0.87%	3.43%	6.05%	9.94%
20	-0.94%	1.61%	3.43%	5.28%	7.99%
30	-0.15%	1.94%	3.43%	4.93%	7.14%
40	0.32%	2.14%	3.43%	4.73%	6.63%
50	0.64%	2.28%	3.43%	4.59%	6.29%

- Based on RVK 2015 capital market assumptions and recommended target asset allocation.



Economic Assumptions Investment Return



- Stochastic projection expected range of real rates of return (SPRS)

Time Span In Years	Real Returns by Percentile				
	5 th	25 th	50 th	75 th	95 th
1	-15.35%	-4.70%	3.49%	12.39%	26.53%
5	-5.40%	-0.25%	3.49%	7.38%	13.23%
10	-2.88%	0.83%	3.49%	6.23%	10.29%
20	-1.06%	1.60%	3.49%	5.42%	8.25%
30	-0.24%	1.95%	3.49%	5.06%	7.36%
40	0.26%	2.15%	3.49%	4.85%	6.84%
50	0.59%	2.29%	3.49%	4.71%	6.48%

- Based on RVK 2015 capital market assumptions and recommended target asset allocation.



Economic Assumptions Investment Return



➤ Recommendation

- ASOP No. 27 approach
- Projection results – 50 years – KERS Non-Hazardous

Item	25 th Percentile	50 th Percentile	75 th Percentile
Real Rate of Return	2.28%	3.43%	4.59%
Inflation	<u>3.25%</u>	<u>3.25%</u>	<u>3.25%</u>
Net Investment Return	5.53%	6.68%	7.84%



Economic Assumptions Investment Return



- Recommendation
 - ASOP No. 27 approach
 - Projection results – 50 years – SPRS

Item	25 th Percentile	50 th Percentile	75 th Percentile
Real Rate of Return	2.29%	3.49%	4.71%
Inflation	<u>3.25%</u>	<u>3.25%</u>	<u>3.25%</u>
Net Investment Return	5.54%	6.74%	7.96%



Recommendation



➤ KERS Non-Hazardous

Investment Return Assumption	
Current	7.50%
Reasonable Range	5.53% - 7.84%
Recommended	6.75%



Recommendation



➤ SPRS

Investment Return Assumption	
Current	7.50%
Reasonable Range	5.54% - 7.96%
Recommended	6.75%



Impact of Recommendations

Financial Impact on 06/30/2015 KERS Non-Hazardous Valuation

System	Before Change	After Change
KERS Non-Hazardous Pension:		
UAL	\$10,008,682,909	\$10,935,514,161
Funded Ratio	19.02%	17.69%
Employer Rate		
Normal Rate	2.96%	4.38%
Adm. Exp. Load	0.64%	0.64%
UAL Rate	<u>35.33%</u>	<u>35.22%</u>
Total Employer Rate	38.93%	40.24%



Impact of Recommendations

Financial Impact on 06/30/2015 SPRS Valuation

System	Before Change	After Change
SPRS Pension:		
UAL	\$485,768,500	\$542,074,146
Funded Ratio	33.83%	31.00%
Employer Rate		
Normal Rate	8.35%	11.17%
Adm. Exp. Load	0.42%	0.42%
UAL Rate	<u>57.70%</u>	<u>58.75%</u>
Total Employer Rate	66.47%	70.34%

KENTUCKY RETIREMENT SYSTEMS

TO: Members of the Board

FROM: William A. Thielen
Executive Director

DATE: December 3, 2015

SUBJECT: Valuation Presentation PowerPoint and 2014 Final Valuations for KERS, SPRS and CERS Systems

Accompanying this memorandum you will find for your review the PowerPoint presentation that Todd Green and Alisa Bennett, our actuaries from Cavanaugh Macdonald, will use to present the 2015 valuations for the KERS, SPRS and CERS systems. I have also attached to this memorandum copies of the final valuations for each system.

RECOMMENDATION: Recommendations regarding the employer contribution rates that are actuarially required as a result of the 2015 valuations will be presented at the meeting by the KRS actuary, Cavanaugh Macdonald.



Kentucky Employees' Retirement System 2015 Actuarial Valuation Results

December 3, 2015

➤ Basic Retirement Funding Equation

$$C + I = B + E$$

C = Contributions

I = Investment Income

B = Benefits Paid

E = Expenses (administration)



Experience Study

- Since the previous valuation, the actuarial methods and assumptions were updated to reflect an experience study performed over the five-year period ending June 30, 2013.
- June 30, 2015 valuation results reflect the changes due to the experience study.



Demographic Assumptions



- Funds reviewed (pension and healthcare)
 - KERS Non-Hazardous
 - KERS Hazardous
 - CERS Non-Hazardous
 - CERS Hazardous
 - SPRS



Demographic Assumptions



- Study compared what actually happened during the study period (7/01/2008 through 6/30/2013) with what was expected to happen.
- Assumption changes recommended where actual experience differs significantly from expected.
- Judgment required to extrapolate future experience from past experience.



Demographic Assumptions



- Demographic Assumption Changes
 - Adjust withdrawal, retirement and mortality decrements for all Systems to better match experience
 - Adjust disability decrements for KERS Non-Hazardous, KERS Hazardous, and CERS Non-Hazardous to better match experience
 - Adjust certain coverage assumptions for retiree healthcare benefits to better match experience. Participation for those hired before 7/1/2003 based on service at retirement.



Economic Assumptions



- Assumptions reviewed
 - Price inflation
 - Investment return
 - Wage inflation
- Changes

Item	Prior Valuation	Current Valuation
Price Inflation	3.50%	3.25%
Real Rate of Return	<u>4.25%</u>	<u>4.25%</u>
Investment Return	7.75%	7.50%
Price Inflation	3.50%	3.25%
Real Wage Growth	<u>1.00%</u>	<u>0.75%</u>
Wage Inflation	4.50%	4.00%



Combined Funded Status



Fund	June 30, 2015			June 30, 2014		
	Pension	Insurance	Combined	Pension	Insurance	Combined
KERS Non-Hazardous	19.0%	28.8%	20.6%	21.0%	27.9%	22.1%
KERS Hazardous	62.2%	120.4%	79.4%	64.6%	105.6%	78.0%
CERS Non-Hazardous	60.3%	68.7%	62.1%	62.6%	70.0%	64.2%
CERS Hazardous	58.0%	72.3%	62.2%	59.8%	66.8%	62.0%
SPRS	33.8%	65.8%	42.1%	35.6%	66.4%	43.5%



Pension Results



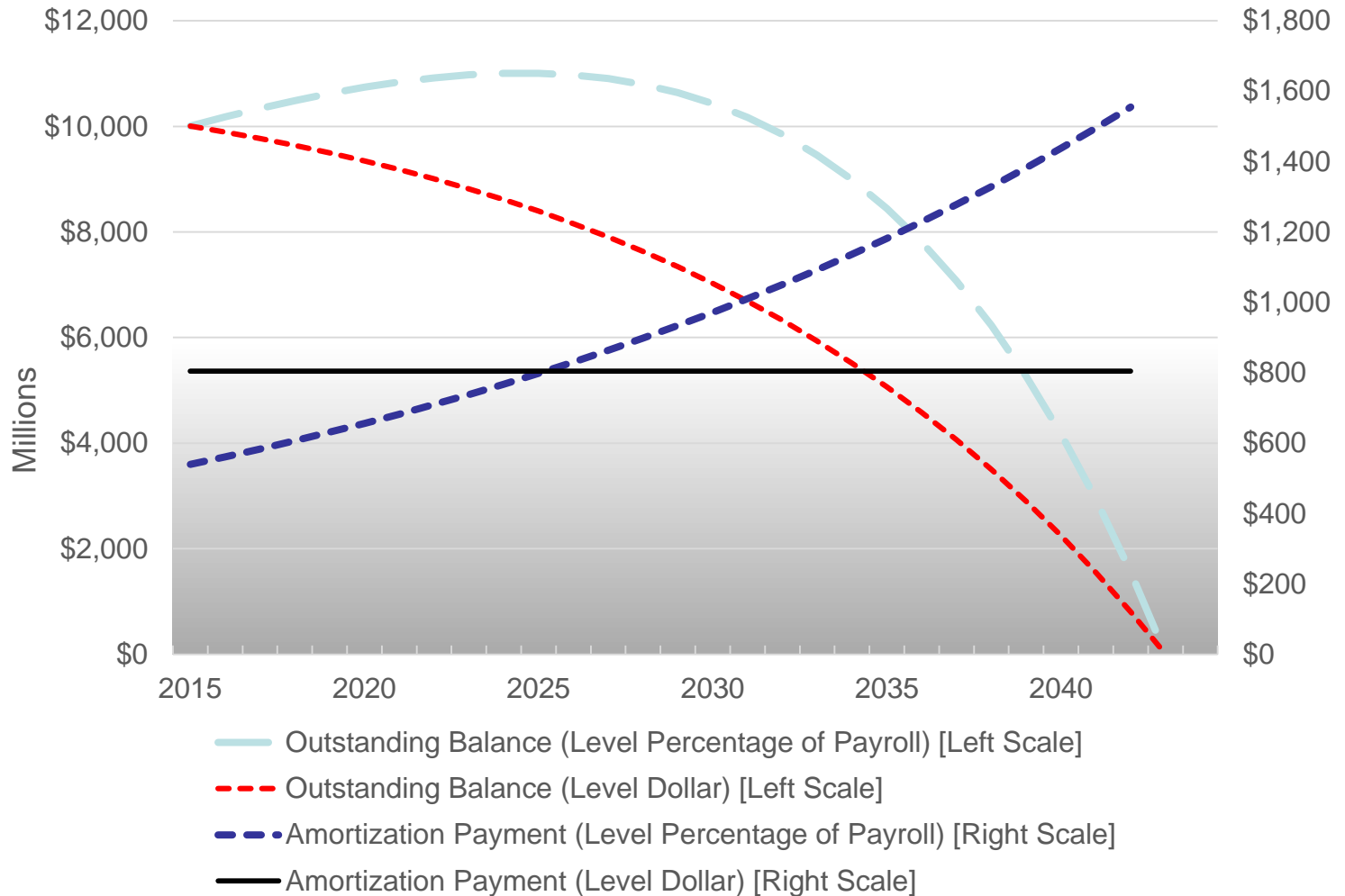
Comments on Pension Valuations



- Market value investment return was less than anticipated for all Funds.
- Because of past gains still being recognized, Actuarial value investment return was greater than expected for all Funds.
- Decrease in funded ratios for all Funds.
- Per statute, amortization period reset to 30 years effective June 30, 2013.
- Amortization period is 28 years as of June 30, 2015 using level percentage of payroll financing.
- Recommended KERS and SPRS contribution rates are set biennially beginning with 14/15 and 15/16 fiscal years based on the July 1, 2013 valuation results. Rates for 16/17 and 17/18 fiscal years will be based on the July 1, 2015 valuation results.

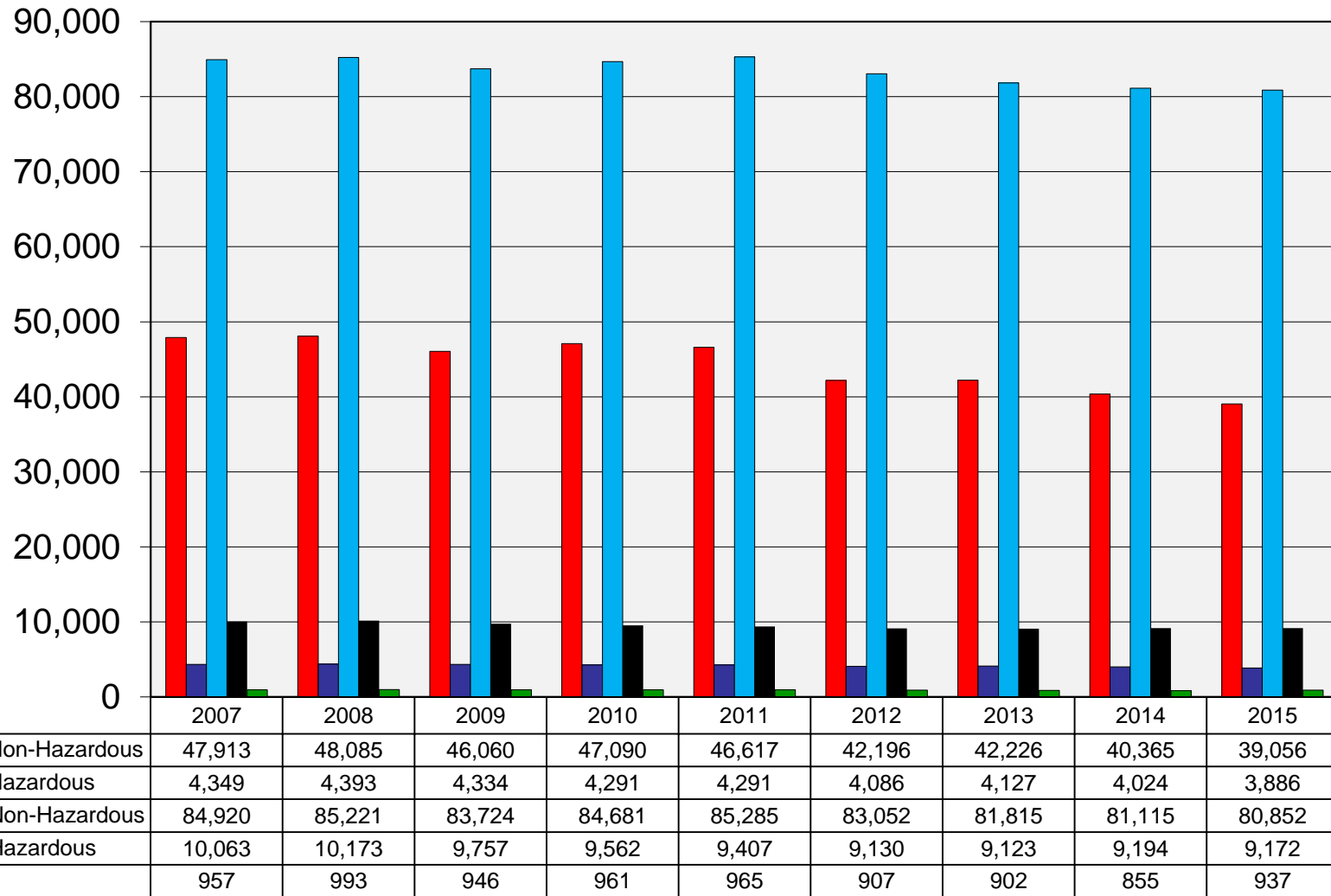


Amortization Schedule of UAL (KERS Non-Hazardous)



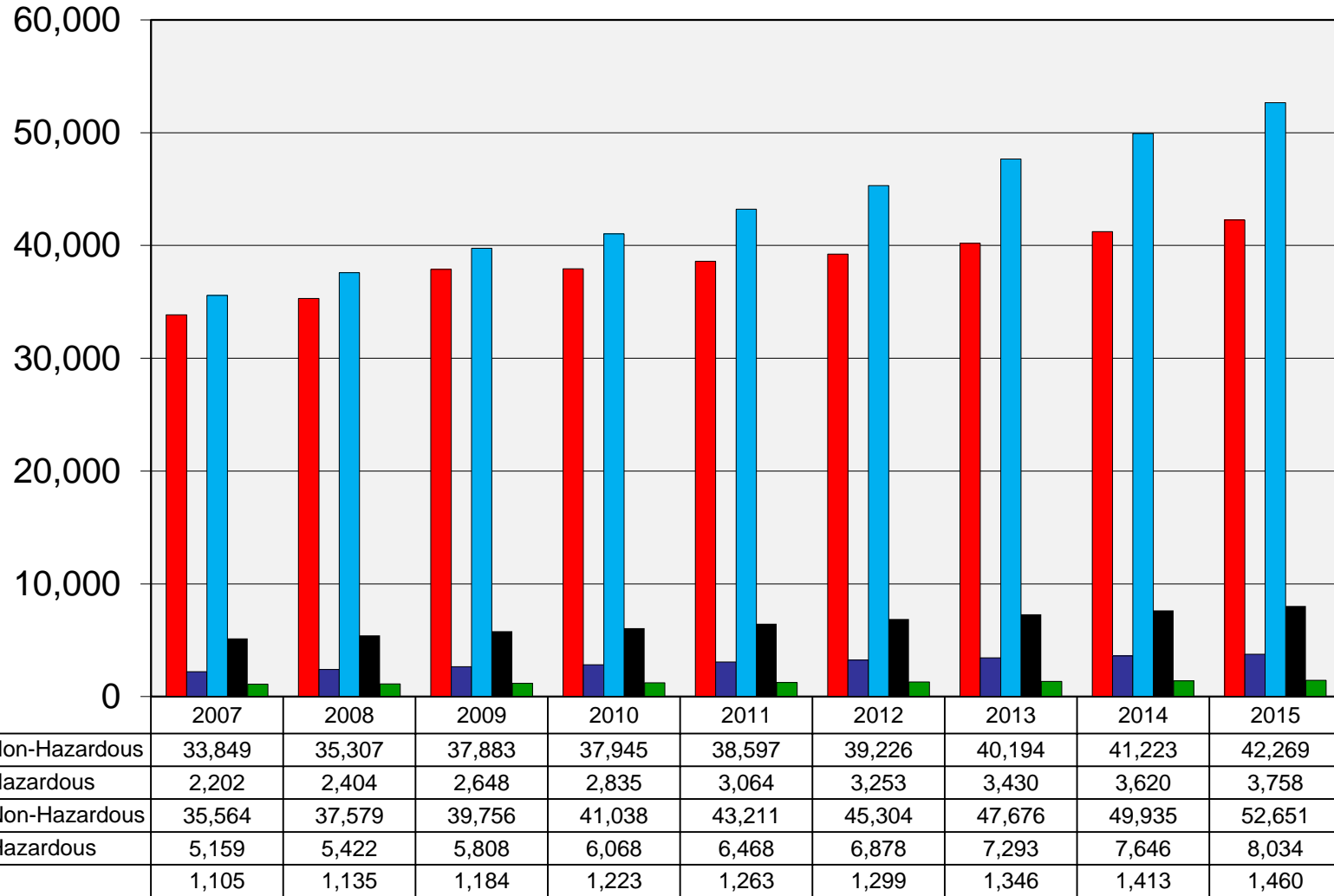


Active Membership



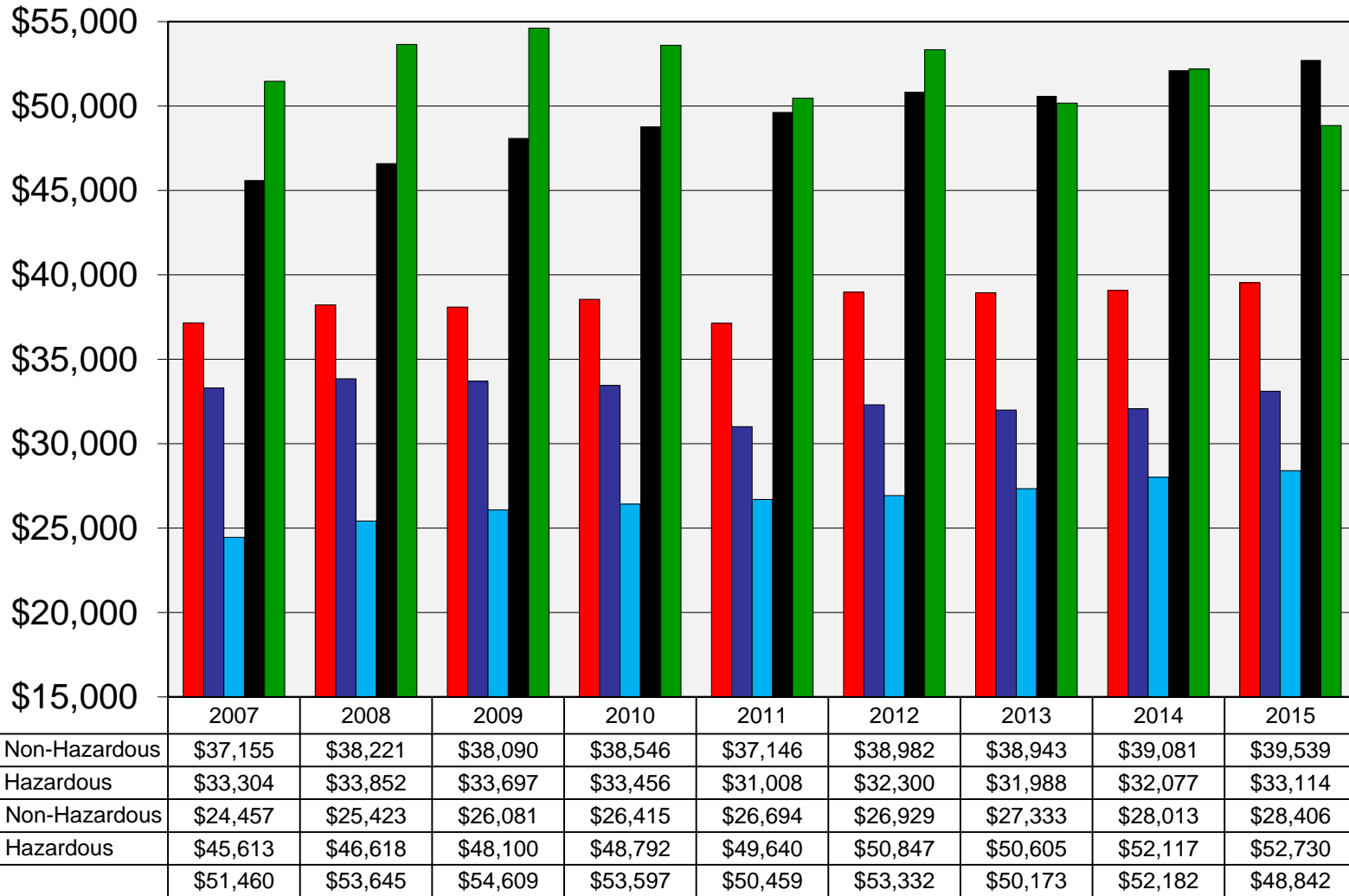


Retired Membership



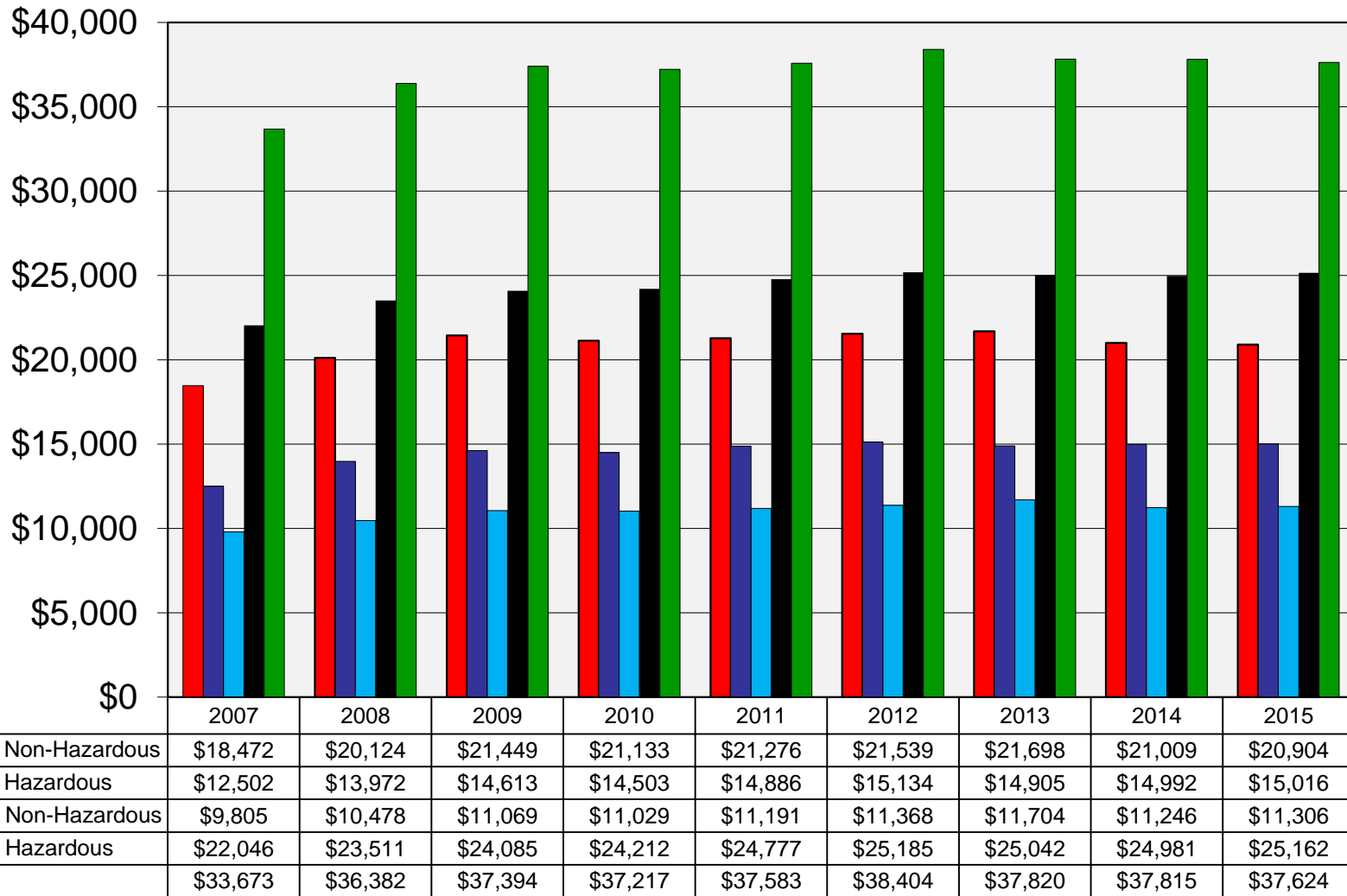


Average Salary



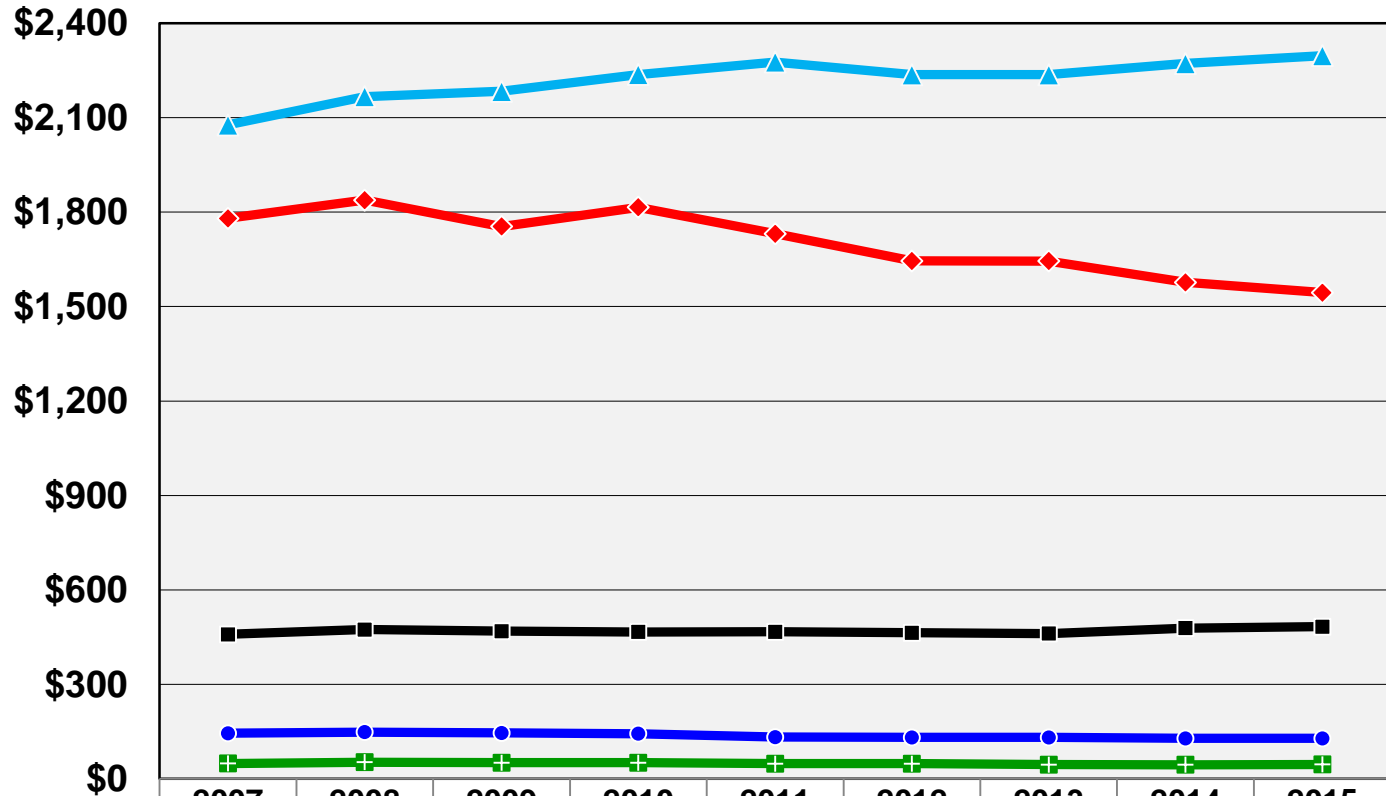


Average Benefits





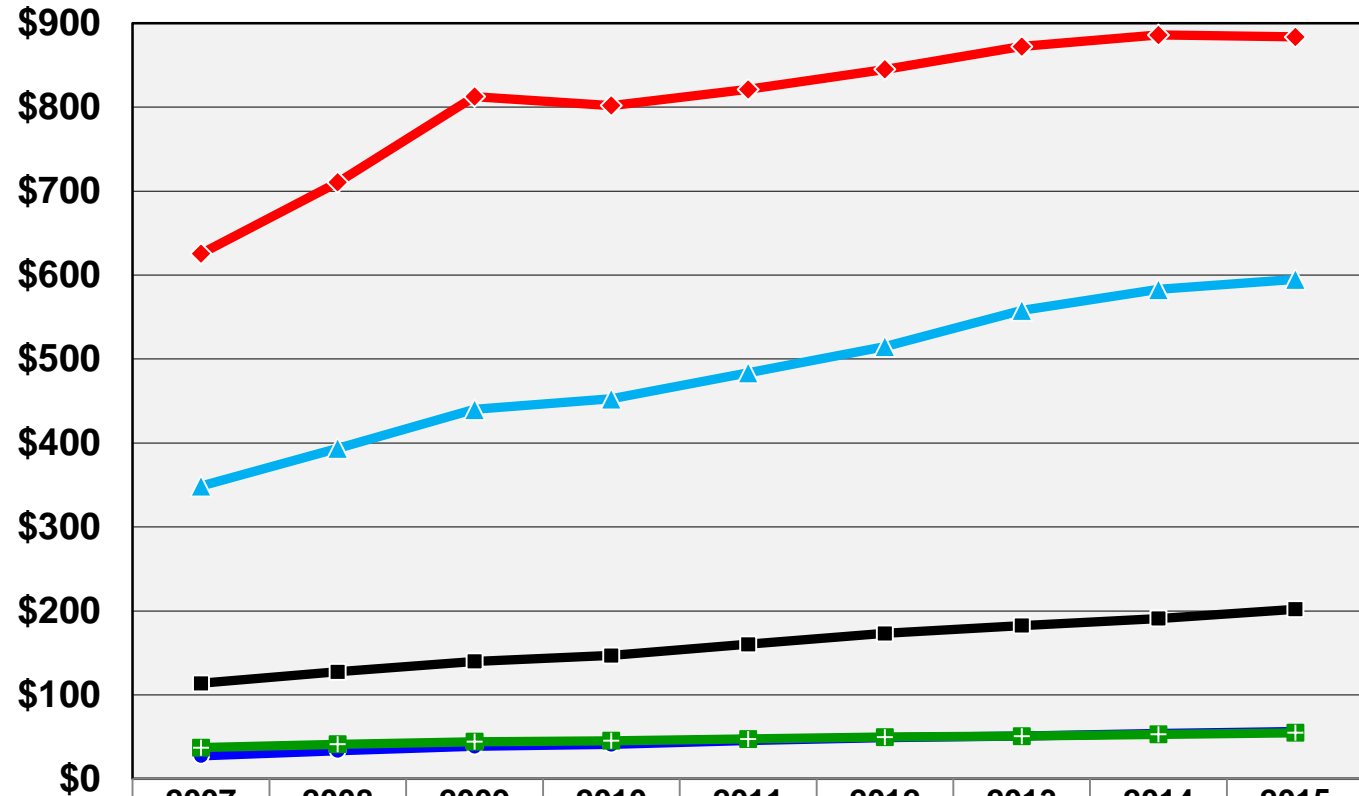
Payroll (\$ Millions)



	2007	2008	2009	2010	2011	2012	2013	2014	2015
KERS Non-Hazardous	\$1,780	\$1,838	\$1,754	\$1,815	\$1,732	\$1,645	\$1,644	\$1,577	\$1,544
KERS Hazardous	\$145	\$149	\$146	\$144	\$133	\$132	\$132	\$129	\$129
CERS Non-Hazardous	\$2,077	\$2,167	\$2,184	\$2,237	\$2,277	\$2,237	\$2,236	\$2,272	\$2,297
CERS Hazardous	\$459	\$474	\$469	\$467	\$467	\$464	\$462	\$479	\$484
SPRS	\$49	\$53	\$52	\$52	\$49	\$48	\$45	\$45	\$46



Benefits (\$ Millions)



	2007	2008	2009	2010	2011	2012	2013	2014	2015
KERS Non-Hazardous	\$625	\$711	\$813	\$802	\$821	\$845	\$872	\$886	\$884
KERS Hazardous	\$28	\$34	\$39	\$41	\$46	\$49	\$51	\$54	\$56
CERS Non-Hazardous	\$349	\$394	\$440	\$453	\$484	\$515	\$558	\$583	\$595
CERS Hazardous	\$114	\$127	\$140	\$147	\$160	\$173	\$183	\$191	\$202
SPRS	\$37	\$41	\$44	\$46	\$47	\$50	\$51	\$53	\$55



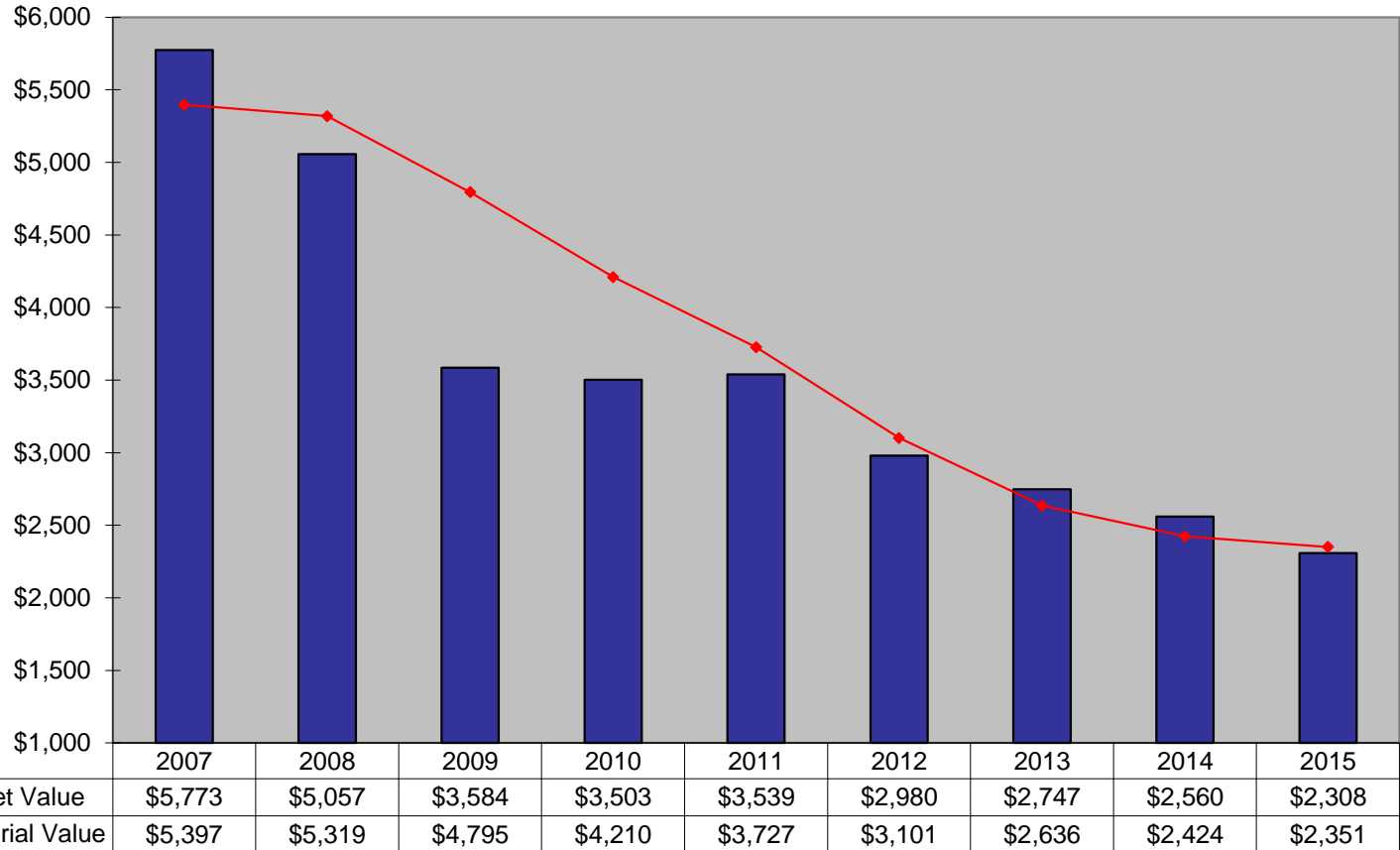
Average Age & Service June 30, 2015



	KERS		CERS		SPRS
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	
Average Age Actives	45.0	40.7	48.0	39.1	36.8
Average Service Actives	10.6	7.5	9.5	10.6	9.8
Average Age Retirees	68.0	63.5	69.7	61.2	61.9
Average Age Disabilities	64.7	58.4	64.4	55.6	57.6
Average Age Beneficiaries	69.8	64.5	67.1	56.5	64.8



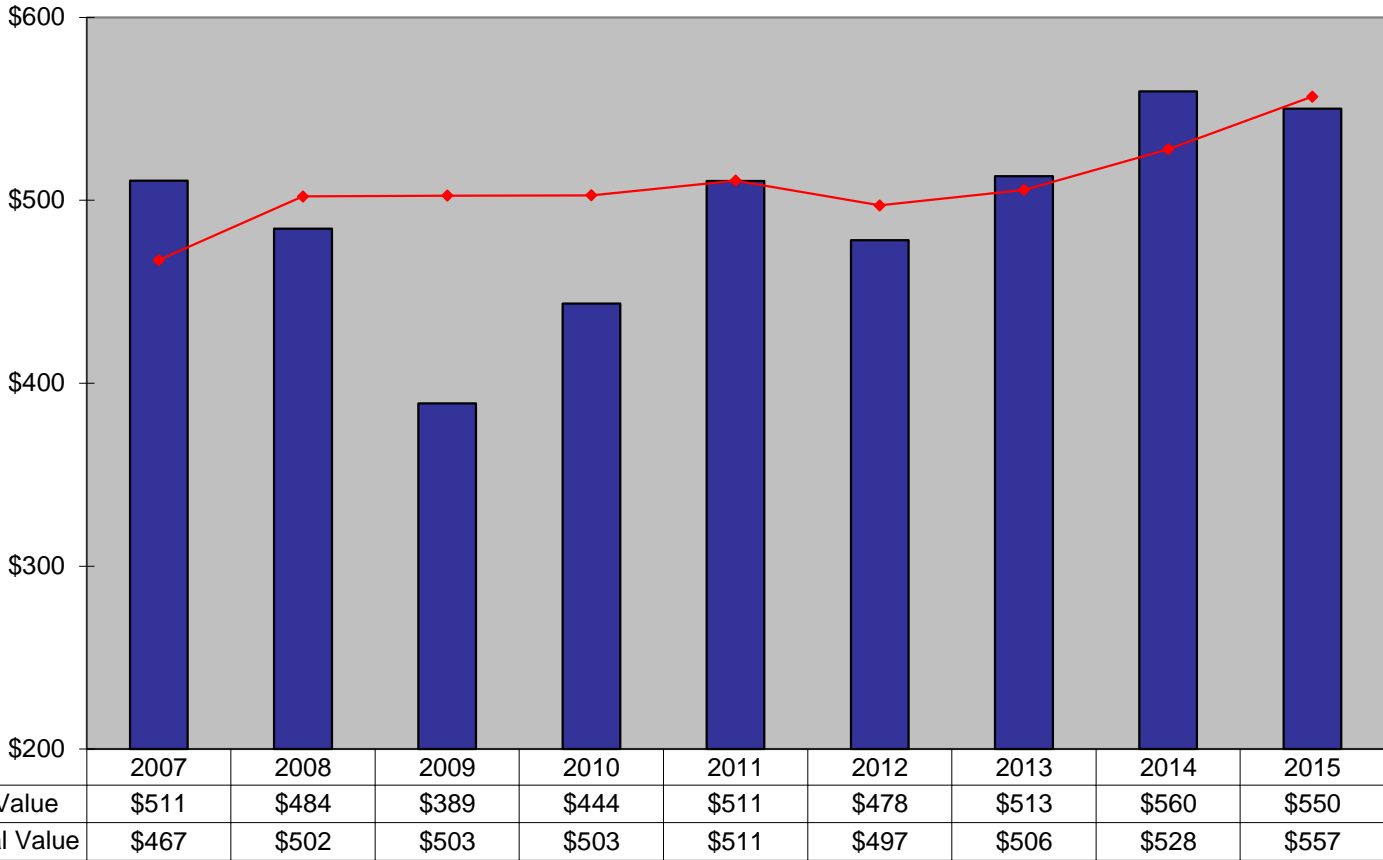
KERS Non-Hazardous Assets (\$ Millions)



Rate of Return	2007	2008	2009	2010	2011	2012	2013	2014	2015
Market Value	15.2%	(3.9)%	(18.3)%	16.1%	18.3%	0.6%	10.5%	13.6%	1.8%
Actuarial Value	8.9%	8.2%	1.7%	0.8%	2.3%	(1.1)%	2.4%	13.2%	9.9%



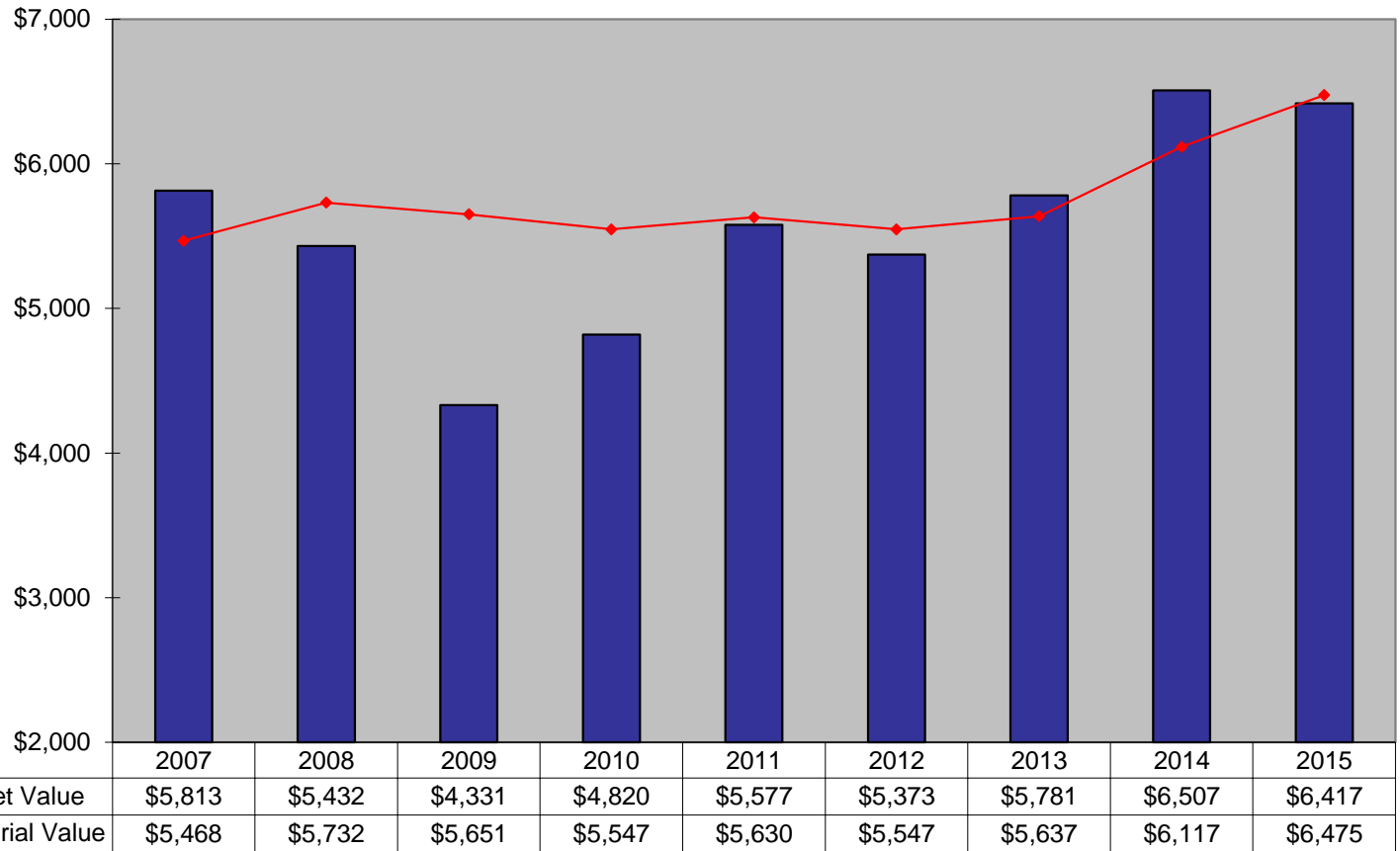
KERS Hazardous Assets (\$ Millions)



Rate of Return	2007	2008	2009	2010	2011	2012	2013	2014	2015
Market Value	18.1%	(4.0)%	(17.6)%	17.1%	18.9%	(1.9)%	10.3%	16.3%	1.6%
Actuarial Value	10.4%	8.8%	2.4%	2.6%	5.1%	2.2%	4.9%	11.6%	9.0%



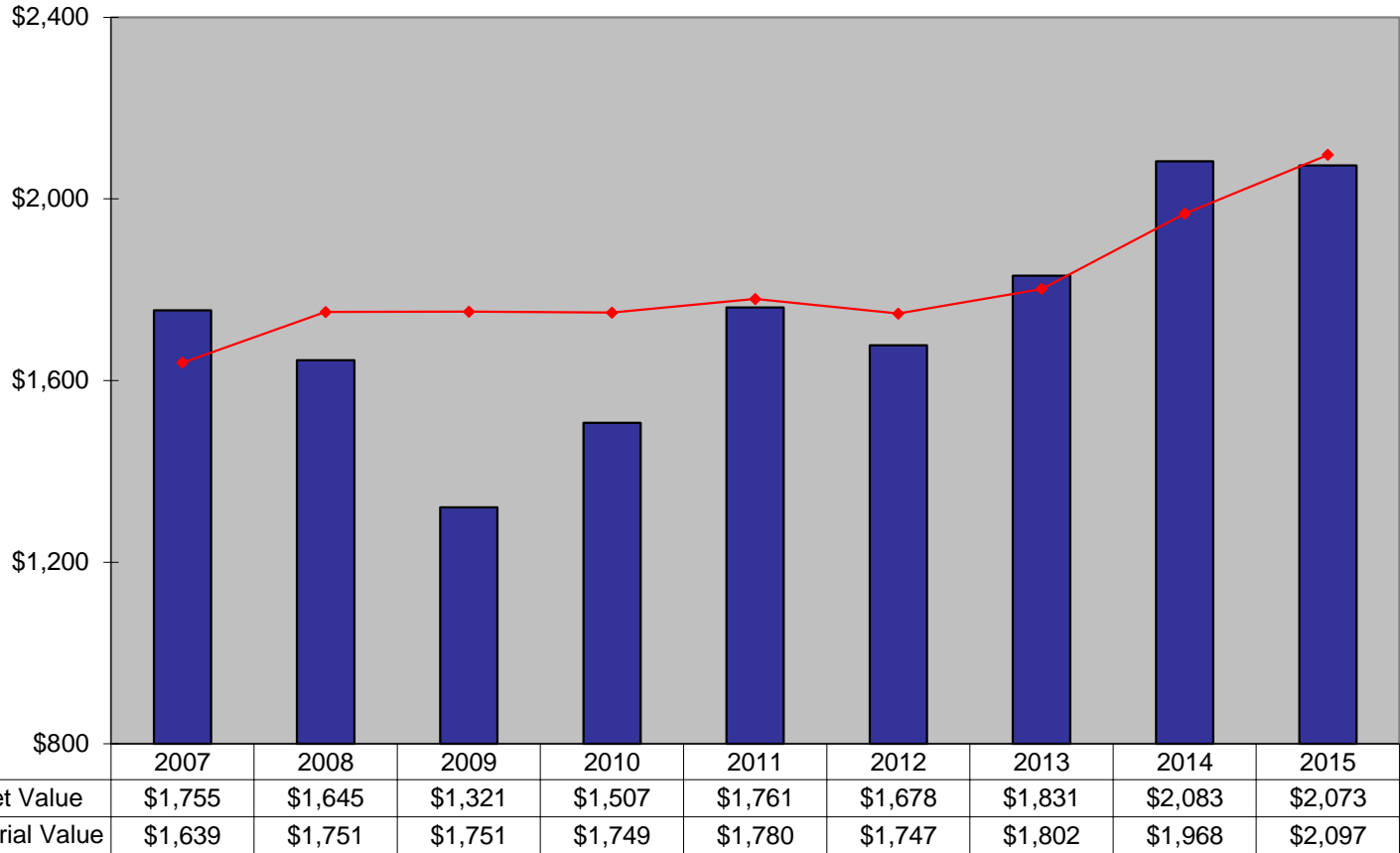
CERS Non-Hazardous Assets (\$ Millions)



Rate of Return	2007	2008	2009	2010	2011	2012	2013	2014	2015
Market Value	15.0%	(3.9)%	(17.4)%	15.8%	18.6%	(0.3)%	10.9%	15.7%	1.7%
Actuarial Value	8.9%	7.8%	1.8%	1.7%	4.1%	2.2%	5.1%	11.7%	9.3%



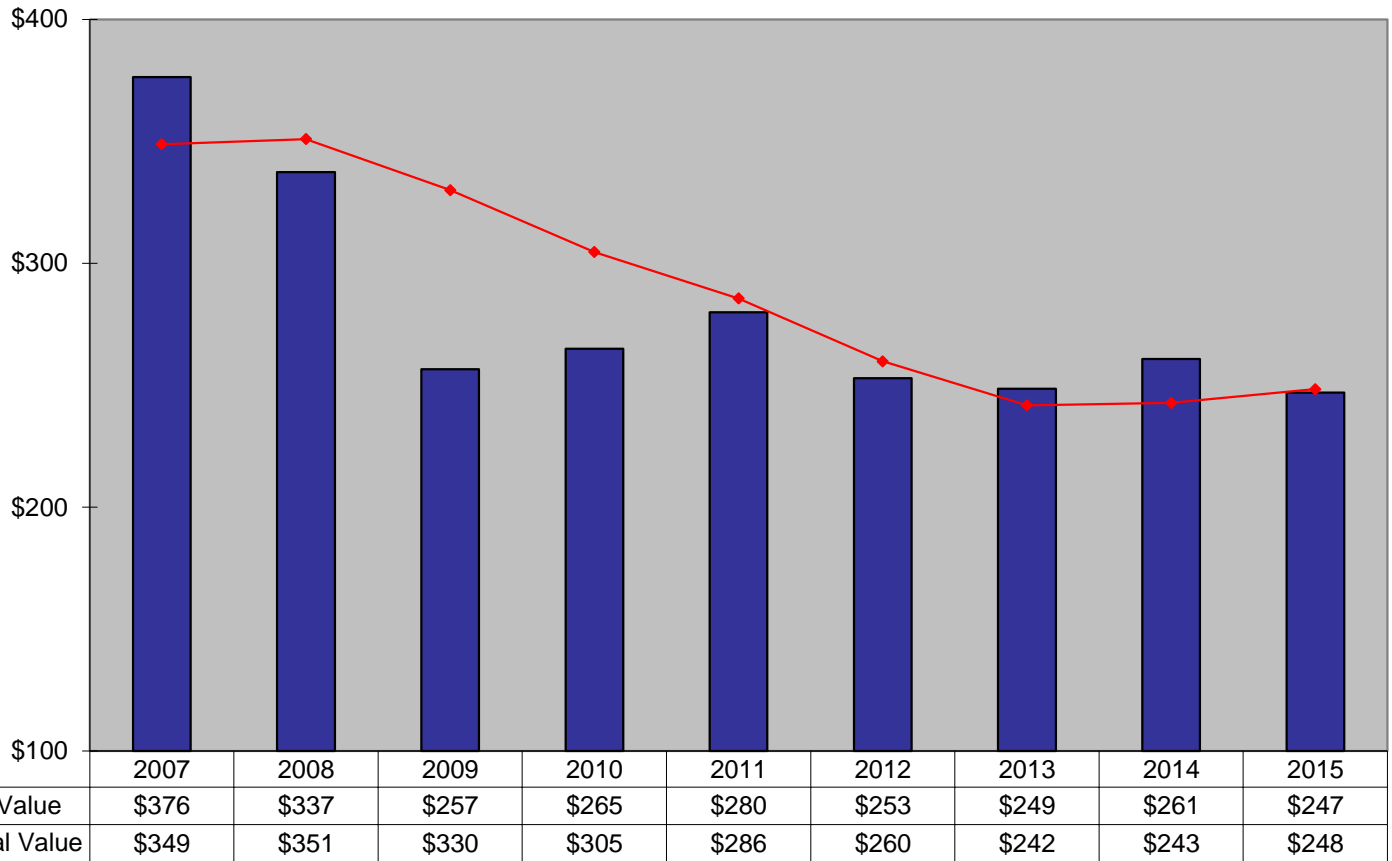
CERS Hazardous Assets (\$ Millions)



Rate of Return	2007	2008	2009	2010	2011	2012	2013	2014	2015
Market Value	15.9%	(5.5)%	(18.5)%	15.7%	19.2%	(1.5)%	10.4%	15.9%	1.8%
Actuarial Value	9.3%	7.7%	1.4%	1.3%	4.5%	1.7%	4.7%	11.3%	9.0%



SPRS Assets (\$ Millions)



Rate of Return	2007	2008	2009	2010	2011	2012	2013	2014	2015
Market Value	14.7%	(3.3)%	(15.9)%	16.9%	17.6%	0.6%	9.8%	17.2%	1.4%
Actuarial Value	9.4%	8.7%	2.7%	2.4%	4.9%	1.0%	4.4%	12.8%	9.8%



Pension Funding Results



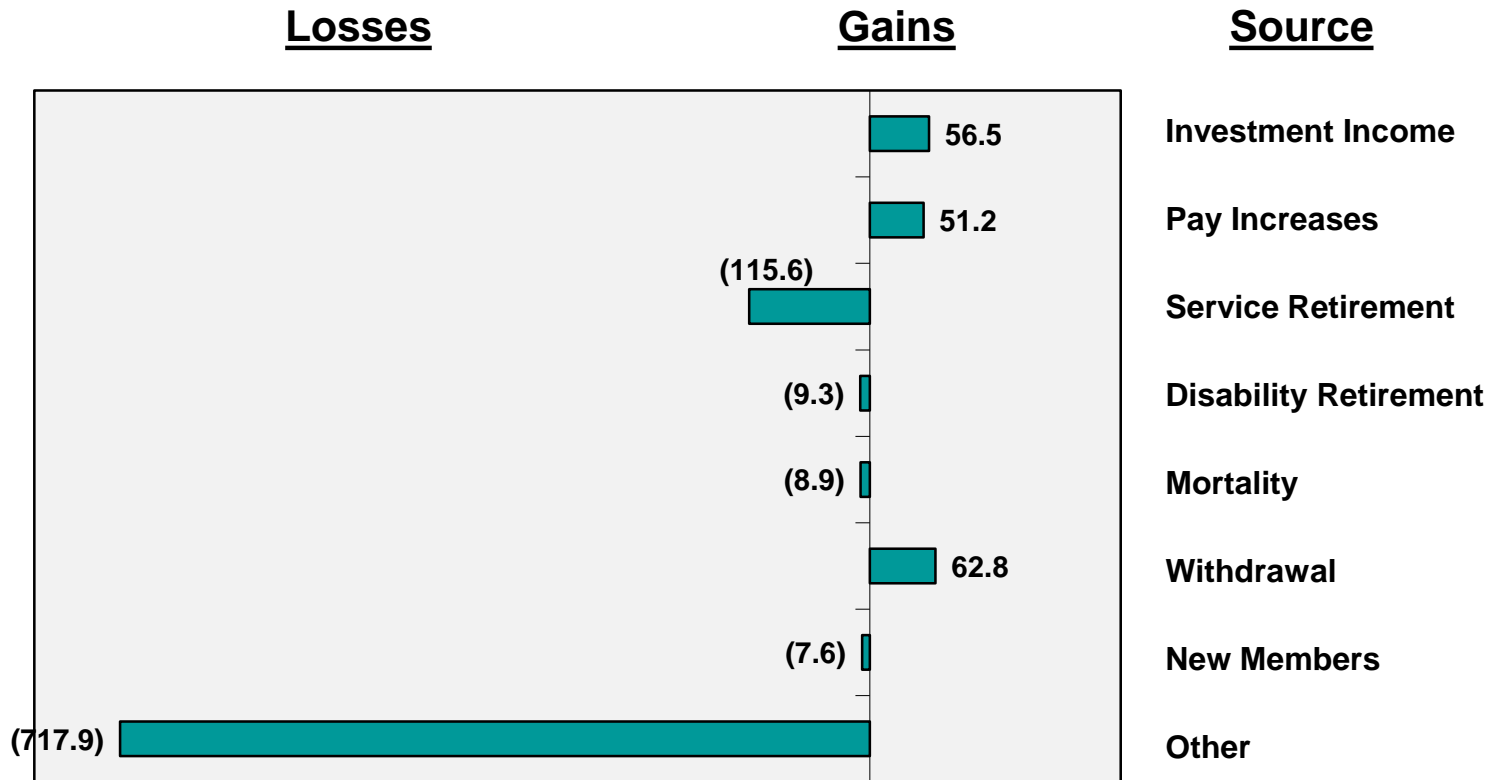
KERS				
	June 30, 2015		June 30, 2014	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous
Total Normal Cost Rate	7.96%	14.30%	8.40%	13.00%
Less Member Rate	<u>5.00%</u>	<u>8.00%</u>	<u>5.00%</u>	<u>8.00%</u>
Employer Normal Cost Rate	2.96%	6.30%	3.40%	5.00%
Administrative Expenses	0.64%	0.63%	0.70%	0.69%
Rate to Amortize UAL	<u>35.33%</u>	<u>14.15%</u>	<u>29.47%</u>	<u>11.40%</u>
Total Employer Contribution Rate	38.93%	21.08%	33.57%	17.09%
Unfunded Accrued Liability (\$ millions)	\$10,008.7	\$338.7	\$9,126.2	\$289.0
Funded Ratio	19.0%	62.2%	21.0%	64.6%
Amortization Period	28	28	29	29



2015 Pension Gain/Loss Analysis (\$ Millions)



KERS Non-Hazardous

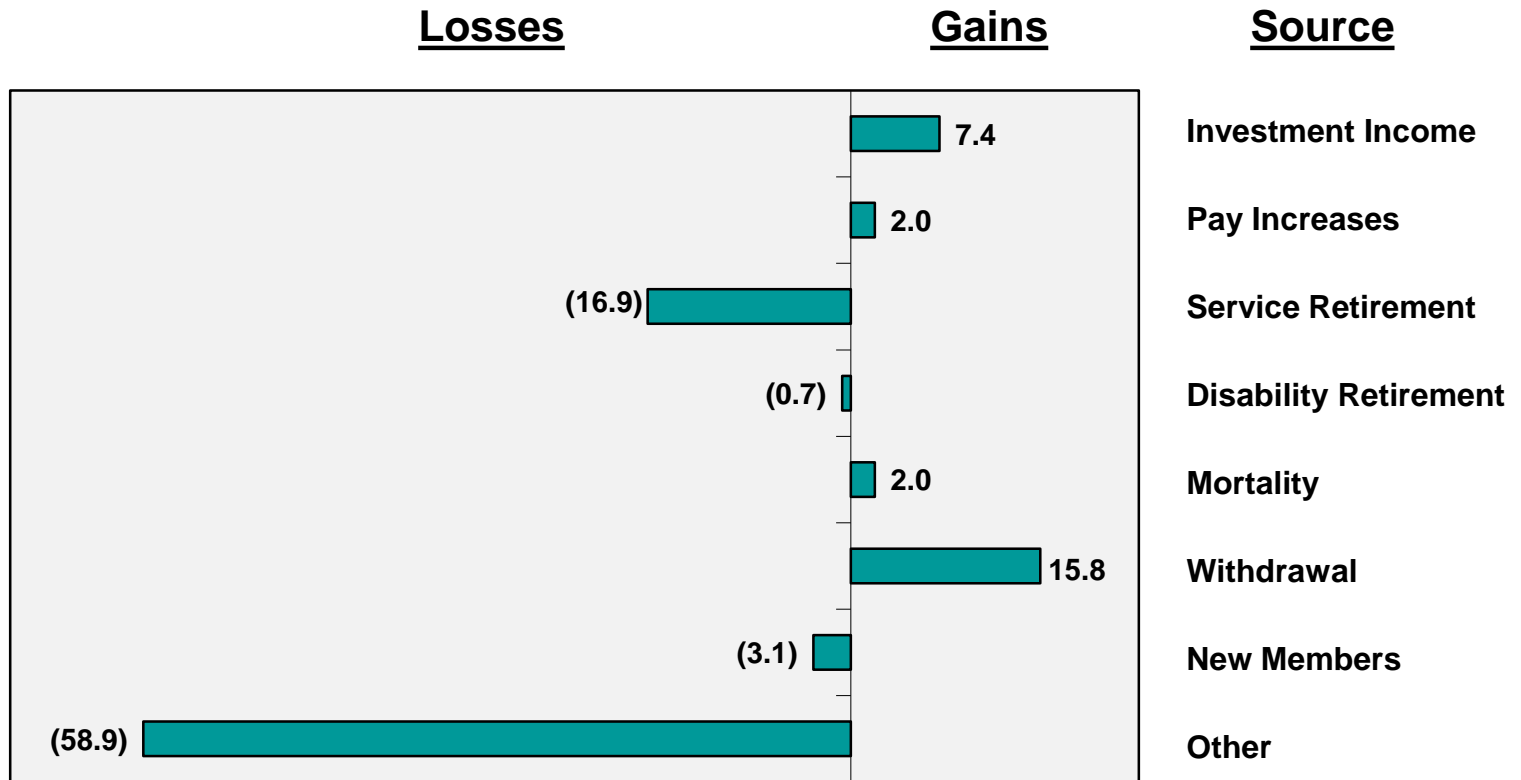




2015 Pension Gain/Loss Analysis (\$ Millions)



KERS Hazardous





Pension Funding Results



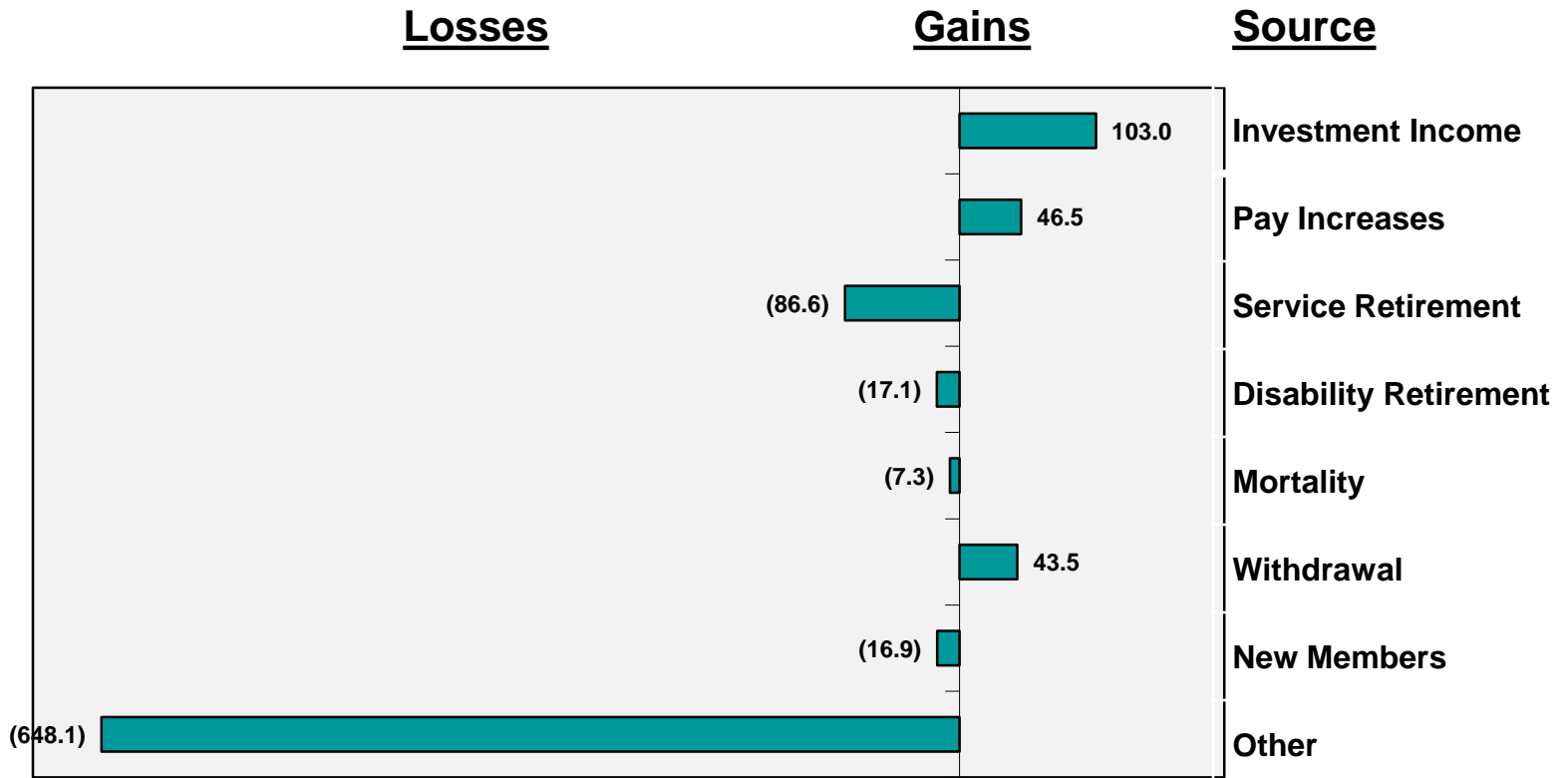
CERS				
	June 30, 2015		June 30, 2014	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous
Total Normal Cost Rate	8.05%	12.26%	8.42%	13.85%
Less Member Rate	<u>5.00%</u>	<u>8.00%</u>	<u>5.00%</u>	<u>8.00%</u>
Employer Normal Cost Rate	3.05%	4.26%	3.42%	5.85%
Administrative Expenses	0.75%	0.26%	0.81%	0.36%
Rate to Amortize UAL	<u>10.15%</u>	<u>17.19%</u>	<u>8.19%</u>	<u>14.05%</u>
Total Employer Contribution Rate	13.95%	21.71%	12.42%	20.26%
Unfunded Accrued Liability (\$ millions)	\$4,265.5	\$1,516.5	\$3,655.4	\$1,321.2
Funded Ratio	60.3%	58.0%	62.6%	59.8%
Amortization Period	28	28	29	29



2015 Pension Gain/Loss Analysis (\$ Millions)



CERS Non-Hazardous

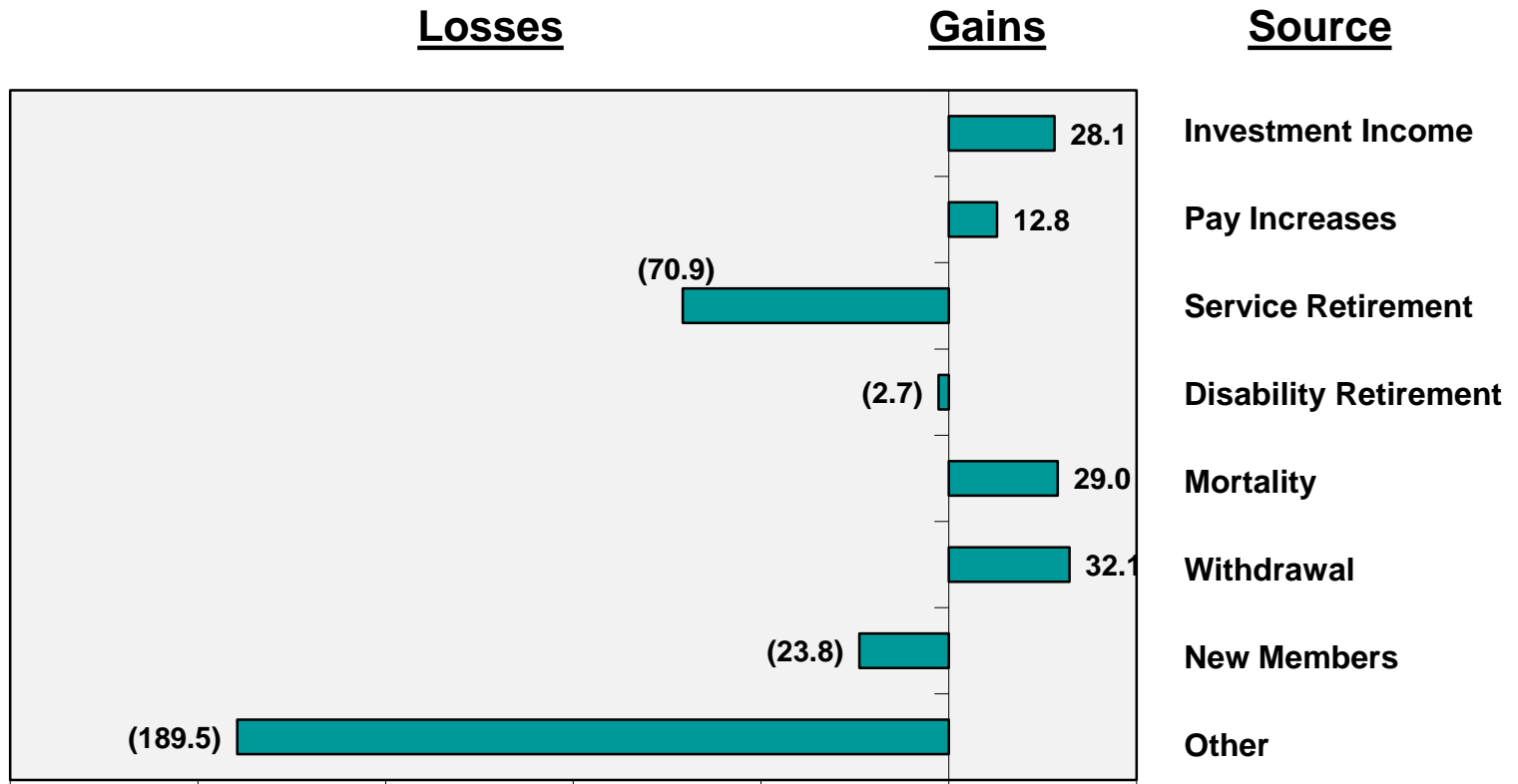




2015 Pension Gain/Loss Analysis (\$ Millions)



CERS Hazardous





Pension Funding Results



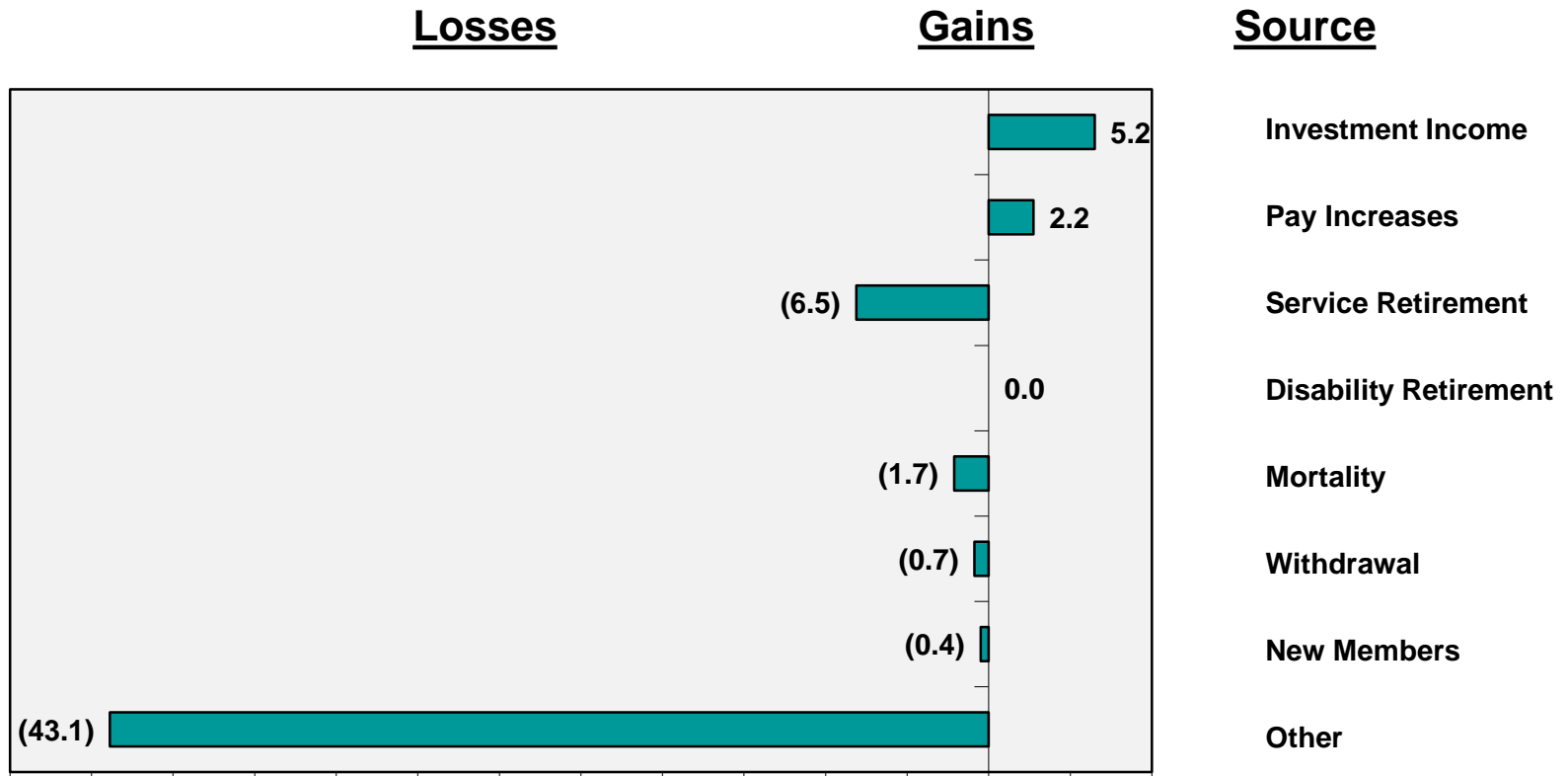
SPRS		
	June 30, 2015	June 30, 2014
Total Normal Cost Rate	16.35%	15.91%
Less Member Rate	<u>8.00%</u>	<u>8.00%</u>
Employer Normal Cost Rate	8.35%	7.91%
Administrative Expenses	0.42%	0.48%
Rate to Amortize UAL	<u>57.70%</u>	<u>50.05%</u>
Total Employer Contribution Rate	66.47%	58.44%
Unfunded Accrued Liability (\$ millions)	\$485.8	\$438.4
Funded Ratio	33.8%	35.6%
Amortization Period	28	29



2015 Pension Gain/Loss Analysis (\$ Millions)



SPRS





Insurance Results



Comments on Insurance Valuation



- Market value investment return was less than anticipated for all Funds.
- Because of past gains still being recognized, Actuarial value investment return was greater than expected for all Funds.
- Increase in funded ratios for all Funds except CERS Non-hazardous and SPRS.
- Per statute, amortization period reset to 30 years effective June 30, 2013.
- Amortization of 28 years for June 30, 2015.
- Recommended KERS and SPRS contribution rates are set biennially beginning with 14/15 and 15/16 fiscal years based on the July 1, 2013 valuation results. Rates for 16/17 and 17/18 fiscal years will be based on the July 1, 2015 valuation results.



Comments on Insurance Valuation



Health Care Trend Assumption

Year	Under Age 65	Age 65 and Over
2015	7.50%	5.50%
2016	6.75%	5.25%
2017	6.25%	5.00%
2018	5.75%	5.00%
2019	5.25%	5.00%
2020 and beyond	5.00%	5.00%

- 2016 pre-Medicare rates and Medicare-eligible rates less than 2015 rates with assumed trend.
- Overall impact a gain for all Systems.



Insurance Funding Results



KERS				
	June 30, 2015		June 30, 2014	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous
Total Normal Cost Rate	2.59%	6.31%	2.71%	8.31%
Less Member Rate	<u>0.30%</u>	<u>0.44%</u>	<u>0.24%</u>	<u>0.36%</u>
Employer Normal Cost Rate	2.29%	5.87%	2.47%	7.95%
Administrative Expenses	0.06%	0.08%	0.05%	0.06%
Rate to Amortize UAL	<u>6.00%</u>	<u>(3.21)%</u>	<u>5.22%</u>	<u>(0.89)%</u>
Total Employer Contribution Rate	8.35%	2.74%	7.74%	7.12%
Unfunded Accrued Liability (\$ millions)	\$1,718.7	(\$76.6)	\$1,605.5	(\$22.4)
Funded Ratio	28.8%	120.4%	27.9%	105.6%
Amortization Period	28	28	29	29



Insurance Funding Results



CERS				
	June 30, 2015		June 30, 2014	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous
Total Normal Cost Rate	3.10%	5.36%	3.36%	8.26%
Less Member Rate	<u>0.34%</u>	<u>0.28%</u>	<u>0.27%</u>	<u>0.21%</u>
Employer Normal Cost Rate	2.76%	5.08%	3.09%	8.05%
Administrative Expenses	0.03%	0.07%	0.02%	0.06%
Rate to Amortize UAL	<u>2.14%</u>	<u>4.64%</u>	<u>1.77%</u>	<u>5.31%</u>
Total Employer Contribution Rate	4.93%	9.79%	4.88%	13.42%
Unfunded Accrued Liability (\$ millions)	\$910.4	\$416.3	\$785.7	\$496.1
Funded Ratio	68.7%	72.3%	70.0%	66.8%
Amortization Period	28	28	29	29



Insurance Funding Results



SPRS		
	June 30, 2015	June 30, 2014
Total Normal Cost Rate	8.72%	10.15%
Less Member Rate	<u>0.24%</u>	<u>0.15%</u>
Employer Normal Cost Rate	8.48%	10.00%
Administrative Expenses	0.14%	0.13%
Rate to Amortize UAL	<u>10.25%</u>	<u>9.04%</u>
Total Employer Contribution Rate	18.87%	19.17%
Unfunded Accrued Liability (\$ millions)	\$87.1	\$78.7
Funded Ratio	65.8%	66.4%
Amortization Period	28	29



CERS Insurance Contribution Rates



- Continuation of ten-year phase-in from 2007 mandated by the Legislature last year.

Fiscal Year Ending June 30	Non-Hazardous Members (Full-funding Rate 4.93%)	Hazardous Members (Full-funding Rate 9.79%)
2017	4.73%	9.35%
2018 and later	4.94%	9.81%



Combined Employer Contribution Rates



Fund	June 30, 2015			June 30, 2014		
	Pension	Insurance	Combined	Pension	Insurance	Combined
Results Before CERS Insurance Phase-In						
CERS Non-Hazardous	13.95%	4.93%	18.88%	12.42%	4.88%	17.30%
CERS Hazardous	21.71%	9.79%	31.50%	20.26%	13.42%	33.68%
Results After CERS Insurance Phase-In						
CERS Non-Hazardous	13.95%	4.73%	18.68%	12.42%	4.64%	17.06%
CERS Hazardous	21.71%	9.35%	31.06%	20.26%	12.69%	32.95%



Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

November 10, 2015

Board of Trustees
Kentucky Retirement Systems
Perimeter Park West
1260 Louisville Road
Frankfort, Kentucky 40601

Subject: Certification of Actuarial Results

Dear Members of the Board:

The fifty-ninth annual actuarial valuation of the Kentucky Employees Retirement System (KERS), the fifty-sixth annual actuarial valuation of the County Employees Retirement System (CERS), and the fifty-seventh annual actuarial valuation of the State Police Retirement System (SPRS) have been completed and the reports prepared. These reports describe the current actuarial condition of the Kentucky Retirement Systems (KRS), determine the calculated employer contribution rates, and analyze fluctuations in these contribution rates.

Under state statute, the Board of Trustees must approve the employer contribution rates. These rates are determined actuarially based upon current membership data, plan provisions, and the assumptions and funding policies adopted by the KRS Board. The June 30, 2015 actuarial valuation will be used by the Board of Trustees to certify the CERS employer contribution rates for the fiscal year beginning July 1, 2016 and ending June 30, 2017. The June 30, 2015 actuarial valuation will be used by the Board of Trustees to certify the KERS and SPRS employer contribution rates for the fiscal years beginning July 1, 2016 and ending June 30, 2018.

Funding Objectives & Policies

For each retirement system, KRS administers both a pension and insurance fund to provide for monthly retirement allowances and retiree insurance benefits respectively. The total employer contribution rate is comprised of a contribution to each respective fund.

Relative to the pension fund, a contribution rate has been established which consists of the normal cost and an amortization payment on the unfunded accrued liability (UAL). The amortization of any UAL is made over 30 years from the establishment of the amortization base using a level percent of payroll amortization method. In accordance with the changes to statute made by SB2, the amortization period was reestablished as a closed 30-year period beginning with the June 30, 2013 actuarial valuation. The amortization period will decrease by one each year in the future.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144

Phone (678) 388-1700 • Fax (678) 388-1730

www.CavMacConsulting.com

Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE



Overall, the total contribution for the pension fund is expected to remain stable as a percentage of payroll over future years in the absence of benefit improvements and material experience gains or losses.

Relative to the insurance fund, the Board's funding objective is to establish a contribution rate which consists of the normal cost and an amortization payment on the UAL. Beginning with the June 30, 2006 valuation, the assumptions and methods used are to meet the requirements of GASB Statement No. 43. As with the pension fund, going forward, the UAL will be amortized over a 30-year period beginning June 30, 2013. The amortization period will decrease by one each year going forward.

Administrative expenses of the plans are also included as part of the total pension fund contribution. This portion of the funding is expected to remain relatively stable as a percentage of payroll over future years.

KERS, CERS and SPRS have three benefit tiers. Members hired prior to or on August 31, 2008 are in Tier 1. HB1 passed into law in 2008 which introduced Tier 2 for members hired after August 31, 2008 and prior to January 1, 2014. Tier 2 reduced the contribution rates in relationship to Tier 1. SB2 was passed into law in 2013 which introduced Tier 3 for those hired on or after January 1, 2014. Tier 3 is a Cash Balance Plan for pension benefits. The cash balance plan limits the employers' exposure to increased contribution rates due to less than anticipated investment experience.

Progress towards Realization of Funding Objectives

The progress towards achieving the intended funding objectives, relative to both the pension and insurance funds, can be measured by the relationship of actuarial assets of each fund to the actuarial accrued liabilities. This relationship is known as the funding level and in the absence of benefit improvements, should increase over time until it reaches 100%.

In recent years, funding levels for the pension funds have fallen dramatically in response to investment returns less than the actuarially assumed rate, higher than anticipated retirement rates, assumption changes and increasing expenditures for retiree Cost of Living Adjustments (COLA). Within the KERS and SPRS plans, prior employer contribution rate reductions enacted by the State Legislature severely limited the plans ability to correct the declining funding levels. SB2 requires the state to contribute the full actuarially determined employer contribution rates compared to the HB1 phase-in rates which would not have required the full actuarially determined employer contribution rate for many years. As of June 30, 2015 the funding levels for the pension funds are as follows:

System	Pension Funding Level
KERS Non-Hazardous Pension Fund	19.0%
KERS Hazardous Pension Fund	62.2%
CERS Non-Hazardous Pension Fund	60.3%
CERS Hazardous Pension Fund	58.0%
SPRS Pension Fund	33.8%



The Board's funding objective for the insurance funds is to increase the funded level consistently over time. As of June 30, 2015 the funding level for the insurance funds are as follows:

System	Insurance Funding Level
KERS Non-Hazardous Insurance Fund	28.8%
KERS Hazardous Insurance Fund	120.4%
CERS Non-Hazardous Insurance Fund	68.7%
CERS Hazardous Insurance Fund	72.3%
SPRS Insurance Fund	65.8%

Data

In completing the valuation of these systems, we have relied on data and financial information provided by the Kentucky Retirement Systems. We have reviewed this data for reasonableness, and made some general edit checks to impute certain information that may not have been provided with the original employee data. However, we have not audited this data. Any schedules of trend data over the past ten years or less contained in the Actuarial Section, as well as the Schedule of Funding Progress and Schedule of Employer Contributions in the Financial Section, have been based on valuation reports fully prepared by the actuary for the plan at the time of each valuation.

Assumptions & Methods

The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the valuation. At least once every five years the actuary conducts a thorough review of plan experience for the preceding five years, and then makes recommendations to the Board. The actuarial assumptions and methods used for the funding calculations of the valuation, as adopted by the Board on December 4, 2014 and based on the experience investigation report dated April 30, 2014, meet the parameters set for disclosure under GASB Statement 43. These assumptions have been adopted by the Board of Trustees of the Kentucky Retirement Systems in accordance with the recommendation of the actuary. The next experience study is scheduled to be completed in early 2019 and any adjustments are expected to be reflected in the June 30, 2019 actuarial valuation.

Closing

The long-term financial health of the three retirement Systems, like all retirement systems, is heavily dependent on two key items: (1) future investment returns and (2) contributions to the System. The System has recently been strengthened due to two reasons. They are: recent legislative action that provides 100% funding of the actuarially determined contribution and the elimination of unfunded ad hoc cost-of-living adjustments for retirees. The cost for providing cost-of-living adjustments for retirees must be prefunded in advance.

The information presented in this letter describes the pertinent issues relative to the valuation. There are no other specific issues that need to be raised beyond these items in order to fairly assess the funded position of the plan as presented in the current valuation.



The funding of the Kentucky Employees Retirement System, the County Employees Retirement System, and the State Police Retirement System has been determined based on the requirements of the Kentucky Revised Statutes and the current funding policies of the Board on the basis that all the actuarial assumptions are met. The funding rates established by the Board are appropriate for this purpose. However, it is up to the state legislature to follow through with the required funding. As noted above, SB2 calls for KERS and SPRS contributions at the actuarially determined rates beginning with fiscal year 2014-2015. It should also be noted that the Retirement Fund of the KERS Non-Hazardous Retirement System and the SPRS Pension Fund are both in critical condition.

Sincerely,

A handwritten signature in blue ink that reads "Todd B. Green" followed by a horizontal line.

Todd B. Green ASA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink that reads "Alisa Bennett" in a cursive style.

Alisa Bennett, FSA, EA, FCA, MAAA
Principal and Consulting Actuary



Summary of June 30, 2015 Actuarial Valuation Results

	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS
<u>Recommended Contribution Rate (Fiscal Year 2016-2017)</u>					
Pension Fund Contribution	38.93%	21.08%	13.95%	21.71%	66.47%
Insurance Fund Contribution	<u>8.35</u>	<u>2.74</u>	<u>4.93</u>	<u>9.79</u>	<u>18.87</u>
Recommended Employer Contribution	47.28%	23.82%	18.88%	31.50%	85.34%
<u>Funded Status as of Valuation Date</u>					
<i>Pension Fund</i>					
Actuarial Liability	\$12,359,672,849	\$895,433,387	\$10,740,325,421	\$3,613,307,547	\$734,156,446
Actuarial Value of Assets	2,350,989,940	556,687,757	6,474,848,513	2,096,782,956	248,387,946
Unfunded Actuarial Liability on Actuarial Value of Assets	10,008,682,909	338,745,630	4,265,476,908	1,516,524,591	485,768,500
Funding Level as a % of Actuarial Value of Assets	19.02%	62.17%	60.29%	58.03%	33.83%
Market Value of Assets	2,307,858,072	550,120,310	6,416,853,506	2,073,397,045	246,968,144
Unfunded Actuarial Liability on Market Value of Assets	10,051,814,777	345,313,077	4,323,471,915	1,539,910,502	487,188,302
Funding Level on Market Value of Assets	18.67%	61.44%	59.75%	57.38%	33.64%
<i>Insurance Fund</i>					
Actuarially Accrued Liability	\$2,413,705,252	\$374,904,234	\$2,907,827,440	\$1,504,015,233	\$254,838,710
Actuarial Value of Assets	695,018,262	451,514,191	1,997,456,463	1,087,707,118	167,774,940
Unfunded Actuarial Liability on Actuarial Value of Assets	1,718,686,990	(76,609,957)	910,370,977	416,308,115	87,063,770
Funding Level as a % of Actuarial Value of Assets	28.79%	120.43%	68.69%	72.32%	65.84%
Market Value of Assets	687,684,080	441,626,285	1,948,454,097	1,061,560,788	165,018,209
Unfunded Actuarial Liability on Market Value of Assets	1,726,021,172	(66,722,051)	959,373,343	442,454,445	89,820,501
Funding Level on Market Value of Assets	28.49%	117.80%	67.01%	70.58%	64.75%
<u>Member Data</u>					
Number of Active Members	39,056	3,886	80,852	9,172	937
Total Annual Payroll (Active Members)	\$1,544,234,409	\$128,680,130	\$2,296,715,957	\$483,640,601	\$45,764,515
Average Annual Pay (Active Members)	\$39,539	\$33,114	\$28,406	\$52,730	\$48,842
Number of Retired Members & Beneficiaries	42,269	3,758	52,651	8,034	1,460
Average Annual Retirement Allowance	\$20,904	\$15,016	\$11,306	\$25,162	\$37,624
Number of Vested Inactive Members	9,806	460	13,649	708	63



Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve



www.CavMacConsulting.com



Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

November 10, 2015

Board of Trustees
Kentucky Retirement Systems
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Dear Members of the Board:

Presented in this report are the results of the annual actuarial valuation of the retirement and insurance benefits provided under the Kentucky Employees Retirement System (KERS). The purpose of the valuation was to measure the System's funding progress and to determine the required employer contribution rates for the fiscal years beginning July 1, 2016 and July 1, 2017. The date of the valuation was June 30, 2015.

The valuation was based upon data, furnished by the Executive Director and the Kentucky Retirement Systems (KRS) staff, concerning active, inactive and retired members along with pertinent financial information. The complete cooperation of the KRS staff in furnishing materials requested is hereby acknowledged with appreciation.

Since the previous valuation, the revised assumptions from the economic and demographic experience investigation covering the five-year period from July 1, 2008 to June 30, 2013 have been reflected in this valuation.

To the best of our knowledge, this report is complete and accurate. The valuation was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The valuation was prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144

Phone (678) 388-1700 • Fax (678) 388-1730

www.CavMacConsulting.com

Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE



The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the system, and on actuarial assumptions that are, in the aggregate, internally consistent and reasonably based on the actual experience of the system.

Respectfully submitted,

A handwritten signature in blue ink that reads "Todd B. Green".

Todd B. Green ASA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink that reads "Alisa Bennett".

Alisa Bennett, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

TBG/AB:kc



TABLE OF CONTENTS

<u>Section</u>	<u>Item</u>	<u>Page No.</u>
I	Summary of Principal Results	1
II	Membership Data	6
III	Assets	8
IV	Comments on Valuation	9
V	Derivation of Experience Gains and Losses	11
VI	Required Contribution Rates	16
VII	Accounting Information	19
<u>Schedule</u>		
A	Valuation Balance Sheet and Solvency Test	24
B	Development of Actuarial Value of Assets	32
C	Statement of Actuarial Assumptions and Methods	36
D	Summary of Main Benefit and Contribution Provisions	43
E	Detailed Tabulations of the Data	55
F	Sensitivity Analysis	65



**REPORT ON THE ANNUAL VALUATION OF THE
KENTUCKY EMPLOYEES RETIREMENT SYSTEM**

PREPARED AS OF JUNE 30, 2015

SECTION I – SUMMARY OF PRINCIPAL RESULTS

This report, prepared as of June 30, 2015, presents the results of the annual actuarial valuation of the retirement and insurance benefits provided under the System. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results, broken down between non-hazardous and hazardous members, are summarized in the following table.

SUMMARY OF PRINCIPAL RESULTS

	KERS Non-Hazardous		KERS Hazardous		KERS Totals	
	6/30/2015	6/30/2014	6/30/2015	6/30/2014	6/30/2015	6/30/2014
Contributions for next fiscal year:						
Retirement	38.93%	33.57%	21.08%	17.09%		
Insurance	<u>8.35</u>	<u>7.74</u>	<u>2.74</u>	<u>7.12</u>	N/A	N/A
Total	47.28%	41.31%	23.82%	24.21%		
Funded status as of valuation date:						
Retirement						
Actuarial accrued liability	\$12,359,672,849	\$11,550,110,224	\$895,433,387	\$816,850,063	\$13,255,106,236	\$12,366,960,287
Actuarial value of assets	2,350,989,940	2,423,956,716	556,687,757	527,897,261	2,907,677,697	2,951,853,977
Unfunded liability on actuarial value of assets	10,008,682,909	9,126,153,508	338,745,630	288,952,802	10,347,428,539	9,415,106,310
Funded ratio on actuarial value of assets	19.02%	20.99%	62.17%	64.63%	21.94%	23.87%
Market value of assets	\$2,307,858,072	\$2,560,419,519	\$550,120,310	\$559,504,340	\$2,857,978,382	\$3,119,923,859
Unfunded liability on market value of assets	10,051,814,777	8,989,690,705	345,313,077	257,345,723	10,397,127,854	9,247,036,428
Funded ratio on market value of assets	18.67%	22.17%	61.44%	68.50%	21.56%	25.23%
Insurance						
Actuarial accrued liability	\$2,413,705,252	\$2,226,759,925	\$374,904,234	\$396,986,820	\$2,788,609,486	\$2,623,746,745
Actuarial value of assets	695,018,262	621,236,646	451,514,191	419,395,867	1,146,532,453	1,040,632,513
Unfunded liability on actuarial value of assets	1,718,686,990	1,605,523,279	(76,609,957)	(22,409,047)	1,642,077,033	1,583,114,232
Funded ratio on actuarial value of assets	28.79%	27.90%	120.43%	105.64%	41.11%	39.66%
Market value of assets	\$687,684,080	\$664,775,708	\$441,626,285	\$435,503,976	\$1,129,310,365	\$1,100,279,684
Unfunded liability on market value of assets	1,726,021,172	1,561,984,217	(66,722,051)	(38,517,156)	1,659,299,121	1,523,467,061
Funded ratio on market value of assets	28.49%	29.85%	117.80%	109.70%	40.50%	41.94%
Demographic data as of valuation date:						
Number of retired participants and beneficiaries	42,269	41,223	3,758	3,620	46,027	44,843
Number of vested former members	9,806	7,891	460	365	10,266	8,256
Number of former members due a refund	38,454	38,748	4,094	3,643	42,548	42,391
Number of active members	39,056	40,365	3,886	4,024	42,942	44,389
Total salary	\$1,544,234,409	\$1,577,496,447	\$128,680,130	\$129,076,038	\$1,672,914,539	\$1,706,572,485
Average salary	\$39,539	\$39,081	\$33,114	\$32,077	\$38,958	\$38,446



The Kentucky Employees Retirement System is a defined benefit pension fund that provides pensions and health care coverage for employees of state government, non-teaching staff at regional state supported universities, local health departments, regional mental health/mental retardation agencies, and other quasi-state agencies. The Kentucky Employees Retirement System includes both non-hazardous and hazardous duty benefits. This report presents the results of the June 30, 2015 actuarial funding valuation for both the Retirement Plan and the Insurance Fund. The primary purpose of performing the actuarial funding valuations are to:

- Calculate the actuarially determined contribution rates for the fiscal years beginning July 1, 2016 and July 1, 2017 for both the Retirement Plan and the Insurance Fund.
- Determine the experience of the System since the last valuation date.
- Disclose asset and liability measures as of the valuation date.
- Analyze and report on trends in contributions, assets, and liabilities over the past several years.

Since the previous valuation there were no changes to the plan provisions, however the actuarial methods and assumptions were updated to reflect an experience study performed over the five-year period ending June 30, 2013 dated April 30, 2014. This experience study was adopted by the Board on December 4, 2014. The experience study reviewed the actuarial assumptions and methods used in the actuarial valuation process of both the Retirement Plan and Insurance Fund. For the Retirement Plan the assumptions fall into three categories. The first are economic assumptions which include price inflation, wage inflation and investment return. The second category includes demographic assumptions which includes assumed rates of mortality, service retirement, disability retirement, withdrawal and salary increases for merits and promotions. For the Insurance Fund the assumptions fall into three categories. The first two, economic assumptions and demographic assumptions are the same as those used for the Retirement Plan. The third category includes other post-employment benefit assumptions.

As a result of the experience the following assumptions were updated:

Summary of Assumptions Changes	
Economic Assumptions	
Salary	Composed of Inflation component, Real Rate of Salary Increase component and Merit/Promotion Scale
Inflation	Reduction to annual assumed rate of inflation assumption from 3.50% to 3.25%.
Wage Inflation	Reduction to annual assumed rate from real salary increase assumption from 1.00% to 0.75%
Investment Rate of Return	Composed of Inflation component (3.25% from above) and Real Rate of Return component. Reduction from 7.75% to 7.50% net investment return assumption.
Payroll Growth	Reduce from 4.50% to 4.00%.



Summary of Assumptions Changes	
Demographic Assumptions	
Withdrawal	Increase rates of withdrawal
Retirement	Adjusted rates of retirement
Disability	Decreased rates of disability
Base Mortality	Healthy Retirees – RP-2000 Mortality Tables Set back one year for females. Disabled Retirees – RP-2000 Combined Disabled Mortality Tables for disabled annuitants set back four years for males. Actives – 50% of the RP-2000 Combined Mortality for males, 30% of the RP-2000 Combined Mortality for Females.
Mortality Projection	Healthy Retiree and Beneficiary – Mortality rates are projected to 2013 using improvement Scale BB Disable Retirees – Mortality rates are projected to 2013 using improvement Scale BB Active Members – Mortality rates are projected to 2013 using improvement Scale BB
Other Post-Employment Benefit Assumptions	Updated participation assumptions

The actuarial valuation results provide “snapshot” view the System’s financial condition on June 30, 2015. Actuarial gains and losses result when actuarial experience of the plan (such as asset return, pay increases, turnover, deaths, etc.) is different from the expected by the actuarial assumptions.

Non-Hazardous

The Retirement Plan’s Unfunded Actuarial Accrued Liability (UAAL) was expected to be \$9,320.0 million taking into account contributions from both the employer and members of \$632.8 million. The actual UAAL was \$10,014.6 million. The increase of \$694.6 million was due to the change in actuarial assumptions and methods offset by an actuarial gain due to actual experience different than what was anticipated by the assumptions. The Insurance Fund’s UAAL was expected to be \$1,641.2 million taking into account expected employer and member contributions of \$125.1 million. The actual UAAL was \$1,718.7 million. The increase in the UAAL of \$77.5 million was due to the change in actuarial assumptions and methods offset by an actuarial gain due to actuarial experience different than what was anticipated by the assumptions.

The remaining amortization period of the UAAL of both the Pension and Insurance Funds is 28-years as of June 30, 2015. Detailed analysis of the gains and losses are presented in Section V of the report.

As of June 30, 2015 the Pension and Insurance Funds had net assets of \$2,307,858,072 and \$687,684,080 respectively. The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the actuarially determined contribution. The asset valuation



method which recognizes the annual unexpected portion of market value investment returns over a five-year period, attempts to dampen the effect of market volatility. The resulting amount is called the “actuarial value of assets” and is utilized to determine the actuarial valuation results. In this year’s actuarial valuation, the actuarial value of assets as of June 30, 2015 was \$2,350,989,940 and \$695,018,262 respectively for the Pension and Insurance Funds.

On a market basis, the estimated rate of return was 1.84% and 1.29% respectively for the Pension and Insurance Funds, assuming all cash flows occur in the middle of the year. Due to better than assumed prior returns on the market value of assets the net rate of return measured on the actuarial value of assets was 9.85% and 9.48% respectively for both the Pension and Insurance Funds. Please see Section III and Schedule B of this report for more detailed information on the market and actuarial value of assets.

Hazardous

The Retirement Plan’s Unfunded Actuarial Accrued Liability (UAAL) was expected to be \$286.3 million taking into account contributions from both the employer and members of \$42.2 million. The actual UAAL was \$338.7 million. The increase of \$52.4 million was due to the change in actuarial assumptions and methods and an actuarial loss due to actual experience different than what was anticipated by the assumptions. The Insurance Funds UAAL was expected to be (\$23.0) million taking into account expected employer and member contributions of \$9.6 million. The actual UAAL was (\$76.6) million. The decrease in the UAAL of \$53.6 million was due to the change in actuarial assumptions and methods and an actuarial gain due to actuarial experience different than what was anticipated by the assumptions.

The remaining amortization period of the UAAL of both the Pension and Insurance Funds is 28-years as of June 30, 2015. Detailed analysis of the gains and losses are presented in Section V of the report.

As of June 30, 2015 the Pension and Insurance Funds had net assets of \$550,120,310 and \$441,626,285 respectively. The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the actuarially determined contribution. The asset valuation method which recognizes the annual unexpected portion of market value investment returns over a five-year period, attempts to dampen the effect of market volatility. The resulting amount is called the “actuarial value of assets” and is utilized to determine the actuarial valuation results. In this year’s actuarial valuation, the actuarial value of assets as of June 30, 2015 was \$556,687,757 and \$451,514,191 respectively for the Pension and Insurance Funds.

On a market basis, the estimated rate of return was 1.58% and 1.79% respectively for the Pension and Insurance Funds, assuming all cash flows occur in the middle of the year. Due to better than assumed prior returns on the market value of assets the net rate of return measured on the actuarial value of assets was 9.03% and 8.07% respectively for both the Pension and Insurance Funds. Please see Section III and Schedule B of this report for more detailed information on the market and actuarial value of assets.



Schedule F provides sensitivity analysis for three different sets of economic assumptions; the discount rate assumption, the inflation assumption, and the payroll growth assumption. Two assumption change scenarios are presented for each economic assumption. The results of the economic assumption change scenarios are presented along with the valuation results for comparison.

The long-term financial health of this retirement System, like all retirement systems, is heavily dependent on two key items: (1) future investment returns and (2) contributions to the System. The System has recently been strengthened due to two reasons. They are: recent legislative action that provides 100% funding of the actuarially determined contribution and the elimination of unfunded ad hoc cost-of-living adjustments for retirees. The cost for providing cost-of-living adjustments for retirees must be prefunded in advance.



SECTION II – MEMBERSHIP DATA

Data regarding the membership of the System for use as a basis for the valuation were furnished by the System's office. The following tables summarize the membership of the system as of June 30, 2015 upon which the valuation was based. Detailed tabulations of the data are given in Schedule E.

Active Members

Employee Group	Number	Payroll	Group Averages		
			Salary	Age	Service
Non-Hazardous	39,056	\$1,544,234,409	\$39,539	45.0	10.6
Hazardous	3,886	128,680,130	33,114	40.7	7.5
Total in KERS	42,942	\$1,672,914,539	\$38,958	44.6	10.3

The following tables show a six-year history of active member valuation data.

SCHEDULE OF NON-HAZARDOUS KERS ACTIVE MEMBER VALUATION DATA

Valuation Date	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
6/30/2010	47,090	\$1,815,146,388	\$38,546	1.2%
6/30/2011	46,617	1,731,632,748	37,146	(3.6)
6/30/2012	42,196	1,644,896,681	38,982	4.9
6/30/2013	42,226	1,644,408,698	38,943	(0.1)
6/30/2014	40,365	1,577,496,447	39,081	0.4
6/30/2015	39,056	1,544,234,409	39,539	1.2

SCHEDULE OF HAZARDOUS KERS ACTIVE MEMBER VALUATION DATA

Valuation Date	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
6/30/2010	4,291	\$143,557,944	\$33,456	(0.7%)
6/30/2011	4,291	133,053,792	31,008	(7.3)
6/30/2012	4,086	131,976,754	32,300	4.2
6/30/2013	4,127	132,015,368	31,988	(1.0)
6/30/2014	4,024	129,076,038	32,077	0.3
6/30/2015	3,886	128,680,130	33,114	3.2



The following tables show the number and annual retirement allowances payable to retired members and their beneficiaries on the roll of the Retirement System as of the valuation date as well as certain group averages.

Non-Hazardous Retired Lives

Type of Benefit Payment	Number	Annual Benefits*	Group Averages	
			Benefit	Age
Retiree	35,867	\$796,779,222	\$22,215	68.0
Disability	1,910	24,556,716	12,857	64.7
Beneficiary	4,492	62,245,624	13,857	69.8
Total in KERS	42,269	\$883,581,562	\$20,904	68.1

* Does not include number and annual benefits for those members included in the hazardous system who are also receiving benefits from the non-hazardous system. There were 2,214 members in the hazardous system also receiving an annual benefit from the non-hazardous System. Total annual benefits for these members is \$19,738,904.

Hazardous Retired Lives

Type of Benefit Payment	Number	Annual Benefits	Group Averages	
			Benefit	Age
Retiree	3,226	\$51,432,997	\$15,943	63.5
Disability	152	1,326,242	8,725	58.4
Beneficiary	380	3,671,860	9,663	64.5
Total in KERS	3,758	\$56,431,099	\$15,016	63.4

This valuation also includes 52,814 inactive members (48,260 Non-Hazardous and 4,554 Hazardous; of which 9,806 Non-Hazardous are vested and 460 Hazardous are vested).



SECTION III – ASSETS

- As of June 30, 2015 the total market value of assets amounted to \$3,987,288,747 as shown in the following table. The Insurance assets include both the amount in the health care trust and the amount in the 401(h) account in the pension trust established to meet the requirements of HB1.

**MARKET VALUE OF ASSETS BY FUND
AS OF JUNE 30, 2015**

Member Group	Retirement	Insurance	KERS Total
Non-Hazardous	\$2,307,858,072	\$687,684,080	\$2,995,542,152
Hazardous	<u>550,120,310</u>	<u>441,626,285</u>	<u>991,746,595</u>
Total	\$2,857,978,382	\$1,129,310,365	\$3,987,288,747

- The five-year smoothed market related actuarial value of assets used for the current valuation was \$4,054,210,150. Schedule B shows the development of the actuarial value of assets as of June 30, 2015. The following table shows the actuarial value of assets allocated among member groups.

COMPARISON OF ACTUARIAL VALUE OF ASSETS

	June 30, 2015	June 30, 2014
Retirement		
Non-Hazardous	\$ 2,350,989,940	\$ 2,423,956,716
Hazardous	<u>556,687,757</u>	<u>527,897,261</u>
Total	\$ 2,907,677,697	\$ 2,951,853,977
Insurance		
Non-Hazardous	\$ 695,018,262	\$ 621,236,646
Hazardous	<u>451,514,191</u>	<u>419,395,867</u>
Total	\$ 1,146,532,453	\$ 1,040,632,513
KERS Total		
Non-Hazardous	\$ 3,046,008,202	\$ 3,045,193,362
Hazardous	<u>1,008,201,948</u>	<u>947,293,128</u>
Total	\$ 4,054,210,150	\$ 3,992,486,490



SECTION IV - COMMENTS ON VALUATION

Schedule A of this report contains the valuation balance sheets which show the present and prospective assets and liabilities of the System as of June 30, 2015. Separate balance sheets are shown for each employee group as well as in total for Retirement and Insurance. Since the previous valuation, the revised assumptions from the economic and demographic experience investigation covering the five-year period from July 1, 2008 to June 30, 2013 have been reflected in this valuation.

Retirement

1. The total valuation balance sheet on account of retirement benefits shows that the System has total prospective retirement benefit liabilities of \$14,452,312,749, of which \$9,694,146,920 is for the prospective benefits payable on account of present retired members and beneficiaries of deceased members, \$376,510,149 is for the prospective benefits payable on account of present inactive members, and \$4,381,655,680 is for the prospective benefits payable on account of present active members. Against these retirement benefit liabilities the System has a total present actuarial value of assets of \$2,907,677,697 as of June 30, 2015. The difference of \$11,544,635,052 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of retirement benefits. Of this amount, \$763,785,056 is the present value of future contributions expected to be made by members, and the balance of \$10,780,849,996 represents the present value of future contributions payable by the employers.
2. The employers' contributions to the System on account of retirement benefits consist of normal contributions, accrued liability contributions and contributions for administrative expenses. The valuation indicates that employer normal contributions at the rate of 2.96% of payroll for non-hazardous members and 6.30% of payroll for hazardous members are required to fund the continuing benefit accruals for the average active member of KERS.
3. Prospective employer normal contributions on account of retirement benefits at the above rates have a present value of \$433,421,457. When this amount is subtracted from \$10,780,849,996, which is the present value of the total future contributions to be made by the employers, there remains \$10,347,428,539 as the amount of future accrued liability contributions.
4. For non-hazardous members, it is recommended that the accrued liability contribution rate payable by the State on account of retirement benefits be set at 35.33% of payroll. For hazardous members, it is recommended that the accrued liability contribution rate payable by the State on account of retirement benefits be set at 14.15% of payroll. These rates are sufficient to liquidate the unfunded accrued liability of \$10,008,682,909 for non-hazardous members and \$338,745,630 for hazardous members over 28 years on the assumption that the aggregate payroll for non-hazardous and hazardous members will increase by 4.00% each year.
5. The contribution rate for administrative expenses is determined to be 0.64% of payroll for non-hazardous members and 0.63% of payroll for hazardous members.



Insurance

1. The total valuation balance sheet on account of insurance benefits shows that the System has total prospective insurance benefit liabilities of \$3,157,765,303, of which \$1,513,706,511 is for the prospective benefits payable on account of present retired members and beneficiaries of deceased members, \$135,758,341 is for the prospective benefits payable on account of present inactive members, and \$1,508,300,451 is for the prospective benefits payable on account of present active members. Against these retirement benefit liabilities the System has a total present actuarial value of assets of \$1,146,532,453 as of June 30, 2015. The difference of \$2,011,232,850 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of retirement benefits. Of this amount, \$38,938,755 is the present value of future contributions expected to be made by members, and the balance of \$1,972,294,095 represents the present value of future contributions payable by the employers.
2. The employers' contributions to the System on account of insurance benefits consist of normal contributions, accrued liability contributions and contributions for administrative expenses. The valuation indicates that employer normal contributions at the rate of 2.29% of payroll for non-hazardous members and 5.87% of payroll for hazardous members are required to fund the continuing benefit accruals for the average active member of KERS.
3. Prospective employer normal contributions on account of insurance benefits at the above rates have a present value of \$330,217,062. When this amount is subtracted from \$1,972,294,095, which is the present value of the total future contributions to be made by the employers, there remains \$1,642,077,033 as the amount of future accrued liability contributions.
4. For non-hazardous members, it is recommended that the accrued liability contribution rate payable by the State on account of insurance benefits be set at 6.00% of payroll. For hazardous members, it is recommended that the accrued liability contribution rate payable by the State on account of insurance benefits be set at (3.21%) of payroll. These rates are sufficient to liquidate the unfunded accrued liability of \$1,718,686,990 for non-hazardous members and \$(76,609,957) for hazardous members over 28 years on the assumption that the aggregate payroll for non-hazardous and hazardous members will increase by 4.00% each year.
5. The contribution rate for administrative expenses is determined to be 0.06% of payroll for non-hazardous members and 0.08% of payroll for hazardous members.



SECTION V – DERIVATION OF EXPERIENCE GAINS AND LOSSES

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain (loss) for the year ended June 30, 2015 is shown below (\$ millions).

**Experience Gain/(Loss)
Retirement Benefits**

		Non-Hazardous Group		Hazardous Group		Total
(1)	UAAL* as of 6/30/14	\$ 9,126.2		\$ 289.0		\$ 9,415.2
(2)	Normal cost from last valuation	133.5		17.4		150.9
(3)	Contributions	632.8		42.2		675.0
(4)	Interest accrual: [(1) + (2)] x .0775 - (3) x .03875	693.1		22.1		715.2
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$ 9,320.0		\$ 286.3		\$ 9,606.3
(6)	Change due to Actuarial Audit	(11.8)		1.0		(10.8)
(7)	Change due to new actuarial assumption or methods	(682.8)		(53.1)		(735.9)
(8)	Expected UAAL after changes: (5) - (6) - (7)	\$ 10,014.6		\$ 338.4		\$ 10,353.0
(9)	Actual UAAL as of 6/30/15	\$ 10,008.7		\$ 338.7		\$ 10,347.4
(10)	Gain/(loss): (8) - (9)	\$ 5.9		\$ (0.3)		\$ 5.6
(11)	Accrued liabilities as of 6/30/14	\$ 11,550.1		\$ 816.9		\$ 12,367.0
(12)	Gain/(loss) as percent of actuarial accrued liabilities at start of year	0.1%		(0.0%)		0.0%

*Unfunded actuarial accrued liability



**Experience Gain/(Loss)
Insurance Benefits**

		Non-Hazardous Group	Hazardous Group	Total
(1)	UAAL* as of 6/30/14	\$ 1,605.5	\$ (22.4)	\$ 1,583.1
(2)	Normal cost from last valuation	42.8	10.7	53.5
(3)	Expected contributions	<u>125.1</u>	<u>9.6</u>	<u>134.7</u>
(4)	Interest accrual: [(1) + (2) - (3)] x .0775	118.0	(1.7)	116.3
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$ 1,641.2	\$ (23.0)	\$ 1,618.2
(6)	Change due to Actuarial Audit	(4.0)	(0.4)	(4.4)
(7)	Change due to new actuarial assumption or methods	(175.9)	30.3	(145.6)
(8)	Expected UAAL after changes: (5) - (6) - (7)	\$ 1,821.1	\$ (52.9)	\$ 1,768.2
(9)	Actual UAAL as of 6/30/15	\$ 1,718.7	\$ (76.6)	\$ 1,642.1
(10)	Gain/(loss): (8) - (9)	\$ 102.4	\$ 23.7	\$ 126.1
(11)	Accrued liabilities as of 6/30/14	\$ 2,226.8	\$ 397.0	\$ 2,623.8
(12)	Gain/(loss) as percent of actuarial accrued liabilities at start of year	4.6%	6.0%	4.8%

* *Unfunded actuarial accrued liability*



**NON-HAZARDOUS KERS MEMBERS
ANALYSIS OF FINANCIAL EXPERIENCE**

**Gains & Losses in Accrued Liabilities
Resulting from Difference Between
Assumed Experience & Actual Experience
(\$ Millions)**

Type of Activity	Retirement \$ Gain (or Loss) For Year Ending 6/30/15	Insurance \$ Gain (or Loss) For Year Ending 6/30/15
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (115.6)	\$ (35.8)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(9.3)	0.9
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(0.4)	(1.6)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	62.8	(5.7)
Pay or Claims Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss. For insurance, smaller claims increases than assumed creates a gain; larger, a loss.	51.2	112.3
New Members. Additional unfunded accrued liability will produce a loss.	(7.6)	(3.7)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	56.5	10.9
Death or Waiver After Retirement. If retired members live longer than assumed, there is a loss. If not as long, a gain. If retired members receiving health benefits later waive coverage, there is a gain.	(8.5)	19.1
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, insurance election changes, etc.	<u>(23.3)</u>	<u>6.0</u>
Gain (or Loss) During Year From Financial Experience	\$ 5.9	\$ 102.4
Non-Recurring Items. Adjustments for plan amendments, assumption changes, method changes and data corrections	<u>(694.6)</u>	<u>(179.9)</u>
Composite Gain (or Loss) During Year	\$ (688.7)	\$ (77.5)



**HAZARDOUS KERS MEMBERS
ANALYSIS OF FINANCIAL EXPERIENCE**

**Gains & Losses in Accrued Liabilities
Resulting from Difference Between
Assumed Experience & Actual Experience
(\$ Millions)**

Type of Activity	Retirement \$ Gain (or Loss) For Year Ending 6/30/15	Insurance \$ Gain (or Loss) For Year Ending 6/30/15
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (16.9)	\$ (8.4)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(0.7)	0.4
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	0.1	0.0
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	15.8	2.8
Pay or Claims Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss. For insurance, smaller claims increases than assumed creates a gain; larger, a loss.	2.0	19.8
New Members. Additional unfunded accrued liability will produce a loss.	(3.1)	(2.5)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	7.4	1.3
Death or Waiver After Retirement. If retired members live longer than assumed, there is a loss. If not as long, a gain. If retired members receiving health benefits later waive coverage, there is a gain.	1.9	5.1
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, insurance election changes, etc.	<u>(6.8)</u>	<u>5.2</u>
Gain (or Loss) During Year From Financial Experience	\$ (0.3)	\$ 23.7
Non-Recurring Items. Adjustments for plan amendments, assumption changes, method changes and data corrections	<u>(52.1)</u>	<u>29.9</u>
Composite Gain (or Loss) During Year	\$ (52.4)	\$ 53.6



**TOTAL KERS MEMBERS
ANALYSIS OF FINANCIAL EXPERIENCE**

**Gains & Losses in Accrued Liabilities
Resulting from Difference Between
Assumed Experience & Actual Experience
(\$ Millions)**

Type of Activity	Retirement \$ Gain (or Loss) For Year Ending 6/30/15	Insurance \$ Gain (or Loss) For Year Ending 6/30/15
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (132.5)	\$ (44.2)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(10.0)	1.3
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(0.3)	(1.6)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	78.6	(2.9)
Pay or Claims Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss. For insurance, smaller claims increases than assumed creates a gain; larger, a loss.	53.2	132.1
New Members. Additional unfunded accrued liability will produce a loss.	(10.7)	(6.2)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	63.9	12.2
Death or Waiver After Retirement. If retired members live longer than assumed, there is a loss. If not as long, a gain. If retired members receiving health benefits later waive coverage, there is a gain.	(6.6)	24.2
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, insurance election changes, etc.	<u>(30.1)</u>	<u>11.2</u>
Gain (or Loss) During Year From Financial Experience	\$ 5.6	\$ 126.1
Non-Recurring Items. Adjustments for plan amendments, assumption changes, method changes and data corrections	<u>(746.7)</u>	<u>(150.0)</u>
Composite Gain (or Loss) During Year	\$ (741.1)	\$ (23.9)



SECTION VI – REQUIRED CONTRIBUTION RATES

The valuation balance sheet gives the basis for determining the percentage rates for contributions to be made by employers to the Retirement System. The following tables show the rates of contribution payable by employers as determined from the present valuation. These rates are for informational purposes only.

Required Contribution Rates Non-Hazardous Retirement

Contribution Rate for	% of Payroll
A. Normal Cost:	
(1) Service retirement benefits	7.63%
(2) Disability benefits	0.25
(3) Survivor benefits	0.08
(4) Total	<u>7.96%</u>
B. Member Contributions	5.00%
C. Employer Normal Cost: [A(4) - B]	2.96%
D. Administrative Expenses	0.64%
E. Unfunded Actuarial Accrued Liability Contributions*:	
(1) UAAL Contribution Based on 6/30/14 Valuation:	29.47%
(2) Change due to:	
a. Active decrements	0.22%
b. Pay increases	(0.18)%
c. Retiree mortality	0.03%
d. Investment return	(0.20)%
e. Assumption Changes	2.41%
f. Payroll Growth Method	1.38%
g. Other	<u>2.20%</u>
h. Total Change	5.86%
(3) UAAL Contribution Based on 6/30/15 Valuation: [E(1) +E(2)h]	35.33%
F. Total Recommended Employer Contribution Rate: [C+D+E(3)]	38.93%

**Based on 28 year amortization of the UAAL from June 30, 2015*



**Required Contribution Rates
Hazardous Retirement**

Contribution Rate for	% of Payroll
A. Normal Cost:	
(1) Service retirement benefits	13.79%
(2) Disability benefits	0.34
(3) Survivor benefits	0.17
(4) Total	<u>14.30%</u>
B. Member Contributions	8.00%
C. Employer Normal Cost: [A(4) - B]	6.30%
D. Administrative Expenses	0.63%
E. Unfunded Actuarial Accrued Liability Contributions*:	
(1) UAAL Contribution Based on 6/30/14 Valuation:	11.40%
(2) Change due to:	
a. Active decrements	0.08%
b. Pay increases	(0.08)%
c. Retiree mortality	(0.08)%
d. Investment return	(0.31)%
e. Assumption Changes	2.22%
f. Payroll Growth Method	0.52%
g. Other	0.40%
h. Total Change	<u>2.75%</u>
(3) UAAL Contribution Based on 6/30/15 Valuation: [E(1) +E(2)h]	14.15%
F. Total Recommended Employer Contribution Rate: [C+D+E(3)]	21.08%

**Based on 28 year amortization of the UAAL from June 30, 2015*



**Required Contribution Rates
Non-Hazardous Insurance**

Contribution for	% of Payroll
A. Normal Cost:	2.59%
B. Member Contributions*	0.30%
C. Employer Normal Cost: [A - B]	2.29%
D. Administrative Expenses	0.06%
E. Unfunded Actuarial Accrued Liability**:	6.00%
F. Total Recommended Employer Contribution Rate: [C+D+E]	8.35%

**The liabilities are net of retiree contributions towards their healthcare.*

*** Based on 28 year amortization of the UAAL from June 30, 2015*

**Required Contribution Rates
Hazardous Insurance**

Contribution for	% of Payroll
A. Normal Cost:	6.31%
B. Member Contributions*	0.44%
C. Employer Normal Cost: [A - B]	5.87%
D. Administrative Expenses	0.08%
E. Unfunded Actuarial Accrued Liability**:	(3.21%)
F. Total Recommended Employer Contribution Rate: [C+D+E]	2.74%

**The liabilities are net of retiree contributions towards their healthcare.*

*** Based on 28 year amortization of the UAAL from June 30, 2015*



SECTION VII - ACCOUNTING INFORMATION

Governmental Accounting Standards Board Statements (GASB) 43, 45, 67 and 68 set forth certain items of required supplementary information to be disclosed in the financial statements of the System and the employer. The information required under GASB 67 and 68 will be issued in separate reports. We are providing the retirement benefit information for information purposes only. One such item is a distribution of the number of employees by type of membership, as follows:

**NUMBER OF ACTIVE AND RETIRED MEMBERS
AS OF JUNE 30, 2015**

GROUP	NUMBER		
	Non-Hazardous*	Hazardous	Total
Retirees and beneficiaries currently receiving benefits	42,269	3,758	46,027
Terminated employees entitled to benefits but not yet receiving benefits	48,260	4,554	52,814
Active Members	<u>39,056</u>	<u>3,886</u>	<u>42,942</u>
Total	129,585	12,198	141,783

** Does not include members included in the hazardous system who are also receiving benefits from the non-hazardous system. There were 2,214 members in in the hazardous system also receiving an annual benefit from the non-hazardous System*

Another such item is the Schedule of Funding Progress for retirement and insurance benefits separately as shown in the following tables.



**RETIREMENT BENEFITS
SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / (c))
Non-Hazardous Members						
6/30/2010	\$ 4,210,215,585	\$ 11,004,795,089	\$ 6,794,579,504	38.3%	\$ 1,815,146,388	374.3%
6/30/2011	3,726,986,087	11,182,142,032	7,455,155,945	33.3	1,731,632,748	430.5
6/30/2012	3,101,316,738	11,361,048,136	8,259,731,398	27.3	1,644,896,681	502.1
6/30/2013	2,636,122,852	11,386,602,159	8,750,479,307	23.2	1,644,408,698	532.1
6/30/2014	2,423,956,716	11,550,110,224	9,126,153,508	21.0	1,577,496,447	578.5
6/30/2015*	2,350,989,940	12,359,672,849	10,008,682,909	19.0	1,544,234,409	648.1
Hazardous Members						
6/30/2010	\$ 502,729,009	\$ 688,149,451	\$ 185,420,442	73.1%	\$ 143,557,944	129.2%
6/30/2011	510,748,505	721,293,444	210,544,939	70.8	133,053,792	158.2
6/30/2012	497,226,296	752,699,457	255,473,161	66.1	131,976,754	193.6
6/30/2013	505,656,808	783,980,594	278,323,786	64.5	132,015,368	210.8
6/30/2014	527,897,261	816,850,063	288,952,802	64.6	129,076,038	223.9
6/30/2015*	556,687,757	895,433,387	338,745,630	62.2	128,680,130	263.2
Total KERS Members						
6/30/2010	\$ 4,712,944,594	\$ 11,692,944,540	\$ 6,979,999,946	40.3%	\$ 1,958,704,332	356.4%
6/30/2011	4,237,734,592	11,903,435,476	7,665,700,884	35.6	1,864,686,540	411.1
6/30/2012	3,598,543,034	12,113,747,593	8,515,204,559	29.7	1,776,873,435	479.2
6/30/2013	3,141,779,660	12,170,582,752	9,028,803,092	25.8	1,776,424,066	508.3
6/30/2014	2,951,853,977	12,366,960,287	9,415,106,310	23.9	1,706,572,485	551.7
6/30/2015	2,907,677,697	13,255,106,236	10,347,428,539	21.9	1,672,914,539	618.5

* Discount rate changed from 7.75% to 7.50%



**INSURANCE BENEFITS
SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / (c))
Non-Hazardous Members						
6/30/2010	\$ 471,341,628	\$ 4,466,136,041	\$ 3,994,794,413	10.6%	\$ 1,815,146,388	220.1%
6/30/2011	451,620,442	4,280,089,633	3,828,469,191	10.6	1,731,632,748	221.1
6/30/2012	446,080,511	3,125,330,157	2,679,249,646	14.3	1,644,896,681	162.9
6/30/2013*	497,584,327	2,128,754,134	1,631,169,807	23.4	1,644,408,698	99.2
6/30/2014	621,236,646	2,226,759,925	1,605,523,279	27.9	1,577,496,447	101.8
6/30/2015**	695,018,262	2,413,705,252	1,718,686,990	28.8	1,544,234,409	111.3
Hazardous Members						
6/30/2010	\$ 314,427,296	\$ 493,297,529	\$ 178,870,233	63.7%	\$ 143,557,944	124.6%
6/30/2011	329,961,615	507,058,767	177,097,152	65.1	133,053,792	133.1
6/30/2012	345,573,948	384,592,406	39,018,458	89.9	131,976,754	29.6
6/30/2013	370,774,403	385,517,675	14,743,272	96.2	132,015,368	11.2
6/30/2014	419,395,867	396,986,820	(22,409,047)	105.6	129,076,038	(17.4)
6/30/2015**	451,514,191	374,904,234	(76,609,957)	120.4	128,680,130	(59.5)
Total KERS Members						
6/30/2010	\$ 785,768,924	\$ 4,959,433,570	\$ 4,173,664,646	15.8%	\$ 1,958,704,332	213.1%
6/30/2011	781,582,057	4,787,148,400	4,005,566,343	16.3	1,864,686,540	214.8
6/30/2012	791,654,459	3,509,922,563	2,718,268,104	22.6	1,776,873,435	153.0
6/30/2013	868,358,730	2,514,271,809	1,645,913,079	34.5	1,776,424,066	92.7
6/30/2014	1,040,632,513	2,623,746,745	1,583,114,232	39.7	1,706,572,485	92.8
6/30/2015	1,146,532,453	2,788,609,486	1,642,077,033	41.1	1,672,914,539	98.2

* Discount rate changed from 4.50% to 7.75%

** Discount rate changed from 7.75% to 7.50%



**INSURANCE BENEFITS
SCHEDULE OF EMPLOYER CONTRIBUTIONS**

Year Ended	Annual Required Contribution	Retiree Drug Subsidy (RDS) Contribution	Employer Contributions	Total Contributions	Percentage Contributed
Non-Hazardous Members					
June 30, 2010	\$376,556,187	\$8,550,914	\$93,976,917	\$102,527,831	27.2%
June 30, 2011	294,897,813	0	129,335,552	129,335,552	43.9
June 30, 2012	297,904,224	0	156,057,216	156,057,216	52.4
June 30, 2013	286,143,134	0	165,330,557	165,330,557	57.8
June 30, 2014	208,880,813	0	166,609,592	166,609,592	79.8
June 30, 2015	130,455,026	0	135,940,337	135,940,337	104.2
Hazardous Members					
June 30, 2010	\$35,045,278	\$319,059	\$21,921,535	\$22,240,594	63.5%
June 30, 2011	29,585,257	0	19,952,580	19,952,580	67.4
June 30, 2012	28,326,206	0	24,538,087	24,538,087	86.6
June 30, 2013	26,252,911	0	25,682,403	25,682,403	97.8
June 30, 2014	15,627,018	0	23,873,967	23,873,967	152.8
June 30, 2015	13,151,938	0	14,882,343	14,882,343	113.2
Total KERS Members					
June 30, 2010	\$411,601,465	\$8,869,973	\$115,898,452	\$124,768,425	30.3%
June 30, 2011	324,483,070	0	149,288,132	149,288,132	46.0
June 30, 2012	326,230,430	0	180,595,303	180,595,303	55.4
June 30, 2013	312,396,045	0	191,012,960	191,012,960	61.1
June 30, 2014	224,507,831	0	190,483,559	190,483,559	84.8
June 30, 2015	143,606,964	0	150,822,680	150,822,680	105.0



The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2015. Additional information as of the latest actuarial valuation follows.

	Non-Hazardous Members	Hazardous Members
Valuation date	6/30/2015	6/30/2015
Actuarial cost method	Entry Age	Entry Age
Amortization	Level Percent Closed	Level Percent Closed
Remaining amortization period	28 years	28 years
Asset valuation method	5 Year Smoothed Market	5 Year Smoothed Market
Medical Trend Assumption (Pre-Medicare)	7.50% - 5.00%	7.50% - 5.00%
Medical Trend Assumption (Post-Medicare)	5.50% - 5.00%	5.50% - 5.00%
Year Ultimate Trend	2020	2020
Dollar Contribution Trend	1.50%	1.50%
Actuarial assumptions:		
Investment rate of return*	7.50%	7.50%
*Includes price inflation at	3.25%	3.25%



SCHEDULE A

Valuation Balance Sheet and Solvency Test

The following valuation balance sheets show the assets and liabilities of the retirement system as of the current valuation date of June 30, 2015 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2014. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date.

VALUATION BALANCE SHEETS SHOWING THE ASSETS AND LIABILITIES OF THE KENTUCKY EMPLOYEES RETIREMENT SYSTEM

RETIREMENT BENEFITS NON-HAZARDOUS KERS MEMBERS

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 2,350,989,940	\$ 2,423,956,716
Prospective contributions		
Member contributions	\$ 672,048,227	\$ 709,583,930
Employer normal contributions	366,345,728	448,523,568
Unfunded accrued liability contributions	<u>10,008,682,909</u>	<u>9,126,153,508</u>
Total prospective contributions	<u>\$ 11,047,076,864</u>	<u>\$ 10,284,261,006</u>
Total assets	<u>\$ 13,398,066,804</u>	<u>\$ 12,708,217,722</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 9,088,328,416	\$ 8,564,988,130
Present value of benefits payable on account of active members	3,960,599,033	3,837,525,126
Present value of benefits payable on account of inactive members	<u>349,139,355</u>	<u>305,704,466</u>
Total liabilities	<u>\$ 13,398,066,804</u>	<u>\$ 12,708,217,722</u>



**VALUATION BALANCE SHEET
RETIREMENT BENEFITS
HAZARDOUS KERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 556,687,757	\$ 527,897,261
Prospective contributions		
Member contributions	\$ 91,736,829	\$ 87,081,053
Employer normal contributions	67,075,729	58,811,616
Unfunded accrued liability contributions	<u>338,745,630</u>	<u>288,952,802</u>
Total prospective contributions	<u>\$ 497,558,188</u>	<u>\$ 434,845,471</u>
Total assets	<u>\$ 1,054,245,945</u>	<u>\$ 962,742,732</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 605,818,504	\$ 558,849,406
Present value of benefits payable on account of active members	421,056,647	381,511,432
Present value of benefits payable on account of inactive members	<u>27,370,794</u>	<u>22,381,894</u>
Total liabilities	<u>\$ 1,054,245,945</u>	<u>\$ 962,742,732</u>



**VALUATION BALANCE SHEET
RETIREMENT BENEFITS
TOTAL KERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 2,907,677,697	\$ 2,951,853,977
Prospective contributions		
Member contributions	\$ 763,785,056	\$ 796,664,983
Employer normal contributions	433,421,457	507,335,184
Unfunded accrued liability contributions	<u>10,347,428,539</u>	<u>9,415,106,310</u>
Total prospective contributions	<u>\$ 11,544,635,052</u>	<u>\$ 10,719,106,477</u>
Total assets	<u>\$ 14,452,312,749</u>	<u>\$ 13,670,960,454</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 9,694,146,920	\$ 9,123,837,536
Present value of benefits payable on account of active members	4,381,655,680	4,219,036,558
Present value of benefits payable on account of inactive members	<u>376,510,149</u>	<u>328,086,360</u>
Total liabilities	<u>\$ 14,452,312,749</u>	<u>\$ 13,670,960,454</u>



**VALUATION BALANCE SHEET
INSURANCE BENEFITS
NON-HAZARDOUS KERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 695,018,262	\$ 621,236,646
Prospective contributions		
Member contributions	\$ 34,833,822	\$ 43,587,814
Employer normal contributions	277,045,451	309,167,195
Unfunded accrued liability contributions	<u>1,718,686,990</u>	<u>1,605,523,279</u>
Total prospective contributions	<u>\$ 2,030,566,263</u>	<u>\$ 1,958,278,288</u>
 Total assets	 <u>\$ 2,725,584,525</u>	 <u>\$ 2,579,514,934</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 1,302,716,841	\$ 1,243,505,028
 Present value of benefits payable on account of active members	 1,297,234,668	 1,153,910,365
 Present value of benefits payable on account of inactive members	 <u>125,633,016</u>	 <u>182,099,541</u>
 Total liabilities	 <u>\$ 2,725,584,525</u>	 <u>\$ 2,579,514,934</u>



**VALUATION BALANCE SHEET
INSURANCE BENEFITS
HAZARDOUS KERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 451,514,191	\$ 419,395,867
Prospective contributions		
Member contributions	\$ 4,104,933	\$ 4,775,581
Employer normal contributions	53,171,611	73,670,480
Unfunded accrued liability contributions	<u>(76,609,957)</u>	<u>(22,409,047)</u>
Total prospective contributions	<u>\$ (19,333,413)</u>	<u>\$ 56,037,014</u>
 Total assets	 <u>\$ 432,180,778</u>	 <u>\$ 475,432,881</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 210,989,670	\$ 186,628,983
Present value of benefits payable on account of active members	211,065,783	268,955,476
Present value of benefits payable on account of inactive members	<u>10,125,325</u>	<u>19,848,422</u>
 Total liabilities	 <u>\$ 432,180,778</u>	 <u>\$ 475,432,881</u>



**VALUATION BALANCE SHEET
INSURANCE BENEFITS
TOTAL KERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 1,146,532,453	\$ 1,040,632,513
Prospective contributions		
Member contributions	\$ 38,938,755	\$ 48,363,395
Employer normal contributions	330,217,062	382,837,675
Unfunded accrued liability contributions	<u>1,642,077,033</u>	<u>1,583,114,232</u>
Total prospective contributions	<u>\$ 2,011,232,850</u>	<u>\$ 2,014,315,302</u>
Total assets	<u>\$ 3,157,765,303</u>	<u>\$ 3,054,947,815</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 1,513,706,511	\$ 1,430,134,011
Present value of benefits payable on account of active members	1,508,300,451	1,422,865,841
Present value of benefits payable on account of inactive members	<u>135,758,341</u>	<u>201,947,963</u>
Total liabilities	<u>\$ 3,157,765,303</u>	<u>\$ 3,054,947,815</u>



The following tables provide the solvency test for non-hazardous and hazardous KERS members.

**Solvency Test
Retirement Benefits
Non-Hazardous KERS Members**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Financed Portion)	Actuarial Value of Assets	(1)	(2)	(3)
6/30/2010	\$ 869,484,042	\$ 8,329,757,802	\$ 1,805,553,245	\$ 4,210,215,585	100.0%	40.1%	0.0%
6/30/2011	916,568,932	8,482,714,356	1,782,858,744	3,726,986,087	100.0	33.1	0.0
6/30/2012	885,137,183	8,708,536,338	1,767,374,615	3,101,316,738	100.0	25.4	0.0
6/30/2013	922,928,027	8,709,323,622	1,754,350,510	2,636,122,852	100.0	19.7	0.0
6/30/2014	928,557,540	8,870,692,596	1,750,860,088	2,423,956,716	100.0	16.9	0.0
6/30/2015	925,933,970	9,437,467,771	1,996,271,108	2,350,989,940	100.0	15.1	0.0

**Solvency Test
Retirement Benefits
Hazardous KERS Members**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Financed Portion)	Actuarial Value of Assets	(1)	(2)	(3)
6/30/2010	\$ 88,511,283	\$ 441,657,241	\$ 157,980,927	\$ 502,729,009	100.0%	93.8%	0.0%
6/30/2011	86,614,205	490,395,078	144,284,161	510,748,505	100.0	86.5	0.0
6/30/2012	82,100,877	521,688,803	148,909,777	497,226,296	100.0	79.6	0.0
6/30/2013	82,145,602	545,596,534	156,238,458	505,656,808	100.0	77.6	0.0
6/30/2014	83,663,535	581,231,300	151,955,228	527,897,261	100.0	76.4	0.0
6/30/2015	83,606,204	633,189,298	178,637,885	556,687,757	100.0	74.7	0.0



**Solvency Test
Insurance Benefits
Non-Hazardous KERS Members**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1)	(2)	(3)	Actuarial Value of Assets	(1)	(2)	(3)
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed Portion)				
6/30/2010	\$ 0	\$ 2,744,534,054	\$ 1,721,601,987	\$ 471,341,628	100.0%	17.2%	0.0%
6/30/2011	0	2,568,002,978	1,712,086,655	451,620,442	100.0	17.6	0.0
6/30/2012	0	1,924,068,623	1,201,261,534	446,080,511	100.0	23.2	0.0
6/30/2013	0	1,338,772,860	789,981,274	497,584,327	100.0	37.2	0.0
6/30/2014	0	1,425,604,569	801,155,356	621,236,646	100.0	43.6	0.0
6/30/2015	0	1,428,349,857	985,355,395	695,018,262	100.0	48.7	0.0

**Solvency Test
Insurance Benefits
Hazardous KERS Members**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1)	(2)	(3)	Actuarial Value of Assets	(1)	(2)	(3)
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed Portion)				
6/30/2010	\$ 0	\$ 268,510,709	\$ 224,786,820	\$ 314,427,296	100.0%	100.0%	20.4%
6/30/2011	0	285,539,861	221,518,906	329,961,615	100.0	100.0	20.1
6/30/2012	0	196,578,935	188,013,471	345,573,948	100.0	100.0	79.2
6/30/2013	0	202,031,515	183,486,160	370,774,403	100.0	100.0	92.0
6/30/2014	0	206,477,405	190,509,415	419,395,867	100.0	100.0	100.0
6/30/2015	0	221,114,995	153,789,239	451,514,191	100.0	100.0	100.0

SCHEDULE B

**Development of Actuarial Value of Assets
Retirement Benefits
Non-Hazardous Members**



Valuation date June 30:	2014	2015	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	\$ 2,636,122,852	\$ 2,423,956,716				
B. Market Value End of Year	2,560,419,519	2,307,858,072				
C. Market Value Beginning of Year	2,747,428,086	2,560,419,519				
D. Cash Flow						
D1. Contributions	389,777,286	632,777,097				
D2. Benefit Payments	(903,563,734)	(919,342,856)				
D3. Administrative Expenses	(11,144,929)	(10,473,878)				
D4. Investment Expenses	<u>(9,152,919)</u>	<u>(16,315,268)</u>				
D5. Net	(534,084,296)	(313,354,905)				
E. Investment Income						
E1. Market Total: B.-C.-D5.	347,075,729	60,793,458				
E2. Assumed Rate	7.75%	7.75%				
E3. Amount for Immediate Recognition	201,737,505	203,237,495				
E4. Amount for Phased-In Recognition	145,338,224	(142,444,037)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	29,067,645	(28,488,807)	0	0	0	0
F2. First Prior Year	15,221,118	29,067,645	(28,488,807)	0	0	0
F3. Second Prior Year	(46,821,807)	15,221,118	29,067,645	(28,488,807)	0	0
F4. Third Prior Year	68,172,485	(46,821,807)	15,221,118	29,067,645	(28,488,807)	0
F5. Fourth Prior Year	<u>54,541,214</u>	<u>68,172,485</u>	<u>(46,821,807)</u>	<u>15,221,118</u>	<u>29,067,645</u>	<u>(28,488,807)</u>
F6. Total Recognized Investment Gain	120,180,655	37,150,634	(31,021,851)	15,799,956	578,838	(28,488,807)
G. Actuarial Value End of Year:						
A.+D5.+E3.+F6.	\$ 2,423,956,716	\$ 2,350,989,940				
H. Difference Between Market & Actuarial Values	\$ 136,462,803	\$ (43,131,868)	\$ (12,110,017)	\$ (27,909,973)	\$ (28,488,807)	\$ 0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



**Development of Actuarial Value of Assets
Retirement Benefits
Hazardous Members**

Valuation date June 30:	2014	2015	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	\$ 505,656,808	\$ 527,897,261				
B. Market Value End of Year	559,504,340	550,120,310				
C. Market Value Beginning of Year	513,162,166	559,504,340				
D. Cash Flow						
D1. Contributions	23,665,778	42,153,137				
D2. Benefit Payments	(57,150,606)	(59,382,637)				
D3. Administrative Expenses	(897,111)	(844,208)				
D4. Investment Expenses	<u>(2,261,049)</u>	<u>(4,013,205)</u>				
D5. Net	(36,642,988)	(22,086,913)				
E. Investment Income						
E1. Market Total: B.-C.-D5.	82,985,162	12,702,883				
E2. Assumed Rate	7.75%	7.75%				
E3. Amount for Immediate Recognition	40,698,817	46,674,435				
E4. Amount for Phased-In Recognition	42,286,345	(33,971,552)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	8,457,269	(6,794,310)	0	0	0	0
F2. First Prior Year	2,416,270	8,457,269	(6,794,310)	0	0	0
F3. Second Prior Year	(9,594,554)	2,416,270	8,457,269	(6,794,310)	0	0
F4. Third Prior Year	9,718,299	(9,594,554)	2,416,270	8,457,269	(6,794,310)	0
F5. Fourth Prior Year	<u>7,187,340</u>	<u>9,718,299</u>	<u>(9,594,554)</u>	<u>2,416,270</u>	<u>8,457,269</u>	<u>(6,794,310)</u>
F6. Total Recognized Investment Gain	18,184,624	4,202,974	(5,515,325)	4,079,229	1,662,959	(6,794,310)
G. Actuarial Value End of Year:						
A.+D5.+E3.+F6.	\$ 527,897,261	\$ 556,687,757				
H. Difference Between Market & Actuarial Values	\$ 31,607,079	\$ (6,567,447)	\$ (1,052,122)	\$ (5,131,351)	\$ (6,794,310)	\$ 0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



**Development of Actuarial Value of Assets
Insurance Benefits
Non-Hazardous Members**

Valuation date June 30:	2014	2015	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	\$ 497,584,327	\$ 621,236,646				
B. Market Value End of Year	664,775,708	687,684,080				
C. Market Value Beginning of Year	509,364,080	664,775,708				
D. Cash Flow						
D1. Contributions	172,080,578	140,393,102				
D2. Benefit Payments	(112,671,651)	(125,273,008)				
D3. Administrative Expenses	(735,604)	(896,134)				
D4. Investment Expenses	<u>(1,929,107)</u>	<u>(3,654,438)</u>				
D5. Net	56,744,216	10,569,522				
E. Investment Income						
E1. Market Total: B.-C.-D5.	98,667,412	12,338,850				
E2. Assumed Rate	7.75%	7.75%				
E3. Amount for Immediate Recognition	43,678,414	55,725,734				
E4. Amount for Phased-In Recognition	54,988,998	(43,386,884)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	10,997,800	(8,677,377)	0	0	0	0
F2. First Prior Year	675,909	10,997,800	(8,677,377)	0	0	0
F3. Second Prior Year	(6,969,893)	675,909	10,997,800	(8,677,377)	0	0
F4. Third Prior Year	11,459,921	(6,969,893)	675,909	10,997,800	(8,677,377)	0
F5. Fourth Prior Year	<u>7,065,952</u>	<u>11,459,921</u>	<u>(6,969,893)</u>	<u>675,909</u>	<u>10,997,800</u>	<u>(8,677,377)</u>
F6. Total Recognized Investment Gain	23,229,689	7,486,360	(3,973,561)	2,996,332	2,320,423	(8,677,377)
G. Actuarial Value End of Year:						
A.+D5.+E3.+F6.	\$ 621,236,646	\$ 695,018,262				
H. Difference Between Market & Actuarial Values	\$ 43,539,062	\$ (7,334,182)	\$ (3,360,621)	\$ (6,356,953)	\$ (8,677,377)	\$ 0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



**Development of Actuarial Value of Asset
Insurance Benefits
Hazardous Members**

Valuation date June 30:	2014	2015	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	\$ 370,774,403	\$ 419,395,867				
B. Market Value End of Year	435,503,976	441,626,285				
C. Market Value Beginning of Year	374,309,576	435,503,976				
D. Cash Flow						
D1. Contributions	24,462,622	15,433,627				
D2. Benefit Payments	(15,404,747)	(17,000,969)				
D3. Administrative Expenses	(77,471)	(100,809)				
D4. Investment Expenses	<u>(1,621,522)</u>	<u>(2,765,329)</u>				
D5. Net	7,358,882	(4,433,480)				
E. Investment Income						
E1. Market Total: B.-C.-D5.	53,835,518	10,555,789				
E2. Assumed Rate	7.75%	7.75%				
E3. Amount for Immediate Recognition	30,978,505	36,452,246				
E4. Amount for Phased-In Recognition	22,857,013	(25,896,457)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	4,571,403	(5,179,291)	0	0	0	0
F2. First Prior Year	1,027,388	4,571,403	(5,179,291)	0	0	0
F3. Second Prior Year	(4,939,727)	1,027,388	4,571,403	(5,179,291)	0	0
F4. Third Prior Year	4,619,785	(4,939,727)	1,027,388	4,571,403	(5,179,291)	0
F5. Fourth Prior Year	<u>5,005,228</u>	<u>4,619,785</u>	<u>(4,939,727)</u>	<u>1,027,388</u>	<u>4,571,403</u>	<u>(5,179,291)</u>
F6. Total Recognized Investment Gain	10,284,077	99,558	(4,520,227)	419,500	(607,888)	(5,179,291)
G. Actuarial Value End of Year:						
A.+D5.+E3.+F6.	\$ 419,395,867	\$ 451,514,191				
H. Difference Between Market & Actuarial Values	\$ 16,108,109	\$ (9,887,906)	\$ (5,367,679)	\$ (5,787,179)	\$ (5,179,291)	\$ 0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



SCHEDULE C

STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the valuation were based on the actuarial experience study for the five-year period ending June 30, 2013, submitted April 30, 2014, and adopted by the Board on December 4, 2014.

INVESTMENT RATE OF RETURN: 7.50% per annum, compounded annually for retirement and insurance benefits.

PRICE INFLATION: 3.25% per annum, compounded annually.

PAYROLL GROWTH: 4.00% per annum, compounded annually.

SALARY INCREASES: The assumed annual rates of future salary increases for both non-hazardous and hazardous members are as follows and include inflation at 4.00% per annum:

Service Years	Annual Rates of Salary Increases				
	Merit & Seniority		Base (Economy)	Increase Next Year	
	Non-Hazardous	Hazardous		Non-Hazardous	Hazardous
0-1	12.02%	15.87%	4.00%	16.50%	20.50%
1-2	4.33%	4.33%	4.00%	8.50%	8.50%
2-3	1.92%	2.40%	4.00%	6.00%	6.50%
3-4	1.44%	1.92%	4.00%	5.50%	6.00%
4-5	1.44%	1.44%	4.00%	5.50%	5.50%
5-6	1.44%	0.96%	4.00%	5.50%	5.00%
6-7	0.96%	0.48%	4.00%	5.00%	4.50%
7-8	0.96%	0.48%	4.00%	5.00%	4.50%
8-9	0.96%	0.48%	4.00%	5.00%	4.50%
9-10	0.48%	0.48%	4.00%	4.50%	4.50%
10 & Over	0.48%	0.48%	4.00%	4.50%	4.50%

DISABILITY: Representative assumed annual rates of disability for both non-hazardous and hazardous members are as follows:

Nearest Age	Annual Rates of Disability			
	Non-Hazardous		Hazardous	
	Male	Female	Male	Female
20	0.02%	0.02%	0.03%	0.03%
30	0.03%	0.03%	0.05%	0.05%
40	0.07%	0.07%	0.10%	0.10%
50	0.19%	0.19%	0.28%	0.28%
60	0.49%	0.49%	0.73%	0.73%



RETIREMENT: The assumed annual rates of retirement for both non-hazardous and hazardous members are as follows:

Annual Rates of Retirement					
Non-Hazardous			Hazardous		
Age	Those Eligible for Service Retirement*	Those Eligible for Service Retirement**	Service	Those Eligible for Service Retirement ⁺	Those Eligible for Service Retirement ⁺⁺
55	8.0%		20	40.0%	
56	8.0%		21	40.0%	
57	8.0%		22	40.0%	
58	8.0%		23	40.0%	
59	8.0%		24	40.0%	
60	10.0%	10.0%	25	47.0%	40.0%
61	20.0%	20.0%	26	47.0%	40.0%
62	20.0%	20.0%	27	47.0%	40.0%
63	20.0%	20.0%	28	47.0%	40.0%
64	20.0%	20.0%	29	47.0%	40.0%
65	20.0%	25.0%	30	47.0%	47.0%
66	20.0%	25.0%	31	47.0%	47.0%
67	20.0%	25.0%	32	50.0%	47.0%
68	20.0%	25.0%	33	50.0%	47.0%
69	20.0%	25.0%	34	50.0%	47.0%
70	20.0%	25.0%	35	60.0%	47.0%
71	20.0%	25.0%	36	60.0%	47.0%
72	20.0%	25.0%	37	60.0%	50.0%
73	20.0%	25.0%	38	60.0%	50.0%
74	20.0%	25.0%	39	60.0%	50.0%
75	100.0%	100.0%	40	60.0%	60.0%

* For members participating before September 1, 2008. If service is at least 27 years, the rate is 35%.

** For members participating on or after September 1, 2008. If age plus service is at least 87, the rate is 35%.

+ For members participating before September 1, 2008. The annual rate of service retirement is 100% at age 65.

++ For members participating on or after September 1, 2008. The annual rate of service retirement is 100% at age 60.



WITHDRAWAL: The assumed annual rates of withdrawal for both non-hazardous and hazardous members are as follows:

Service Years	Annual Rates of Withdrawal	
	Non-Hazardous	Hazardous
0-1	22.50%	25.00%
1-2	15.50%	10.50%
2-3	12.50%	7.50%
3-4	10.50%	6.50%
4-5	9.00%	5.50%
5-6	6.50%	4.50%
6-7	5.50%	3.00%
7-8	5.00%	3.00%
8-9	4.50%	3.00%
9-10	4.50%	2.50%
10-11	4.00%	2.50%
11-13	4.00%	2.00%
13-15	3.50%	2.00%
15 & Over	3.00%	2.00%

DEATH BEFORE RETIREMENT: The rates of mortality for the period before retirement are according to the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (multiplied by 50% for males and 30% for females).

DEATH AFTER RETIREMENT: The rates of mortality for the period after service retirement are according to the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (set back 1 year for females) for all healthy retired members and beneficiaries. The RP-2000 Combined Disabled Mortality Table projected with Scale BB to 2013 (set back 4 years for males) is used for the period after disability retirement. These assumptions are used to measure the probabilities of each benefit payment being made after retirement. These assumptions contain margin for mortality improvements.

PERCENT MARRIED: 100% of employees are assumed to be married, with the wife 3 years younger than the husband.

DEPENDENT CHILDREN: For hazardous members' duty-related death benefits, it is assumed that the member is survived by two dependent children each age 6.

FORM OF PAYMENT: Participants are assumed to elect a life-only form of payment.

ASSET VALUATION METHOD: Five-year market related actuarial value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the ultimate assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected actuarial value.



ACTUARIAL COST METHOD: Costs were determined using the Entry Age Normal, Level Percentage of Pay Actuarial Cost Method. Under this method, a calculation is made for retirement benefits to determine the uniform and constant percentage rate of contribution which, if applied to the compensation of the average new member during the entire period of his or her anticipated covered service, would be required to meet the cost of benefits payable. Actuarial gains and losses are reflected in the unfunded actuarial accrued liability.

MULTIPLE STATUS/MULTIPLE SYSTEM MEMBERS: Some members may be represented under more than one retirement system and/or may have more than one status (e.g., active in one system, deferred vested in another and retired from a different system). For pension purposes, members that are active in one System but have service in another are assumed to retire from the System in which they are currently active. Any deferred pension benefits from another System are assumed to begin once the member terminates from their current active position. The insurance liabilities for multiple status/multiple system members are calculated assuming only one benefit is payable across all Systems and that benefit is payable from the combination of status and System which produces the highest economic value to the member.

AFFORDABLE CARE ACT (ACA): The impact of the Affordable Care Act (ACA) was addressed in this valuation. Review of the information currently available did not identify any specific provisions of the ACA that are anticipated to significantly impact results. While the impact of certain provisions such as the excise tax on high-value health insurance plans beginning in 2018 (if applicable), mandated benefits and participation changes due to the individual mandate should be recognized in the determination of liabilities, overall future plan costs and the resulting liabilities are driven by the assumed rate of health care inflation (i.e., trend). The trend assumption forecasts the anticipated increase to initial per capita costs, taking into account health care cost inflation, increases in benefit utilization, government-mandated benefits, and technological advances. Given the uncertainty regarding the ACA's implementation (e.g., the impact of excise tax on high-value health insurance plans, changes in participation resulting from the implementation of state-based health insurance exchanges), continued monitoring of the ACA's impact on the insurance liability will be required.

HEALTH CARE BENEFITS VALUED: Medical and drug benefits for retirees under age 65 and Medicare eligible.

HEALTH CARE SPOUSE AGE DIFFERENCE: Wives are assumed to be three years younger than husbands.

HEALTH CARE COST TREND RATES: Following is a chart detailing trend assumptions.

Year	Annual Rate of Increase		
	Under Age 65	Age 65 & Older	Dollar Contribution*
2015	7.50%	5.50%	1.50%
2016	6.75%	5.25%	1.50%
2017	6.25%	5.00%	1.50%
2018	5.75%	5.00%	1.50%
2019	5.25%	5.00%	1.50%
2020 & Beyond	5.00%	5.00%	1.50%

* Applies to members participating on or after July 1, 2003



HEALTH CARE AGE RELATED MORBIDITY: For retirees ages 65 and older, per capita health care costs are adjusted to reflect expected health care cost changes related to age. The increase to the net incurred claims was assumed to be:

Participant Age	Annual Increase
65 – 69	3.00%
70 – 74	2.50%
75 – 79	2.00%
80 – 84	1.00%
85 – 89	0.50%
90 & Beyond	0.00%

For the retiree health care liabilities of those under age 65, the current premium charged by the Kentucky Employees' Health Plan (KEHP) is used as the base cost and is projected forward using the healthcare trend assumption. No implicit rate subsidy is calculated or recognized as the implicit rate subsidy is deemed the responsibility of the KEHP.

HEALTH CARE DEFERRED VESTED BENEFIT RECIPIENT INITIAL AGE OF BENEFIT RECEIPT FOR MEMBERS: Health care benefits are assumed to begin at the following ages for deferred vested benefit recipients:

Deferred Vested Initial Age of Benefit Receipt		
Applies Only to Members with Non-Hazardous Service		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
55	55	60

Deferred Vested Initial Age of Benefit Receipt		
Applies Only to Members with Hazardous Service		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
50	50	50



HEALTH CARE ANTICIPATED PLAN PARTICIPATION: Representative values of the assumed annual rates of member participation and spouse coverage are as follows:

Plan Elections of Covered Members Age 65 and Older as of January 1, 2016		
Kentucky Retirement System Health Plan	Non-Hazardous	Hazardous
Medical Only	5.71%	2.92%
Essential	2.72%	1.44%
Premium	91.58%	95.64%

Retirement Participation Rates			
Service at Retirement	Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
Under 10	50.00%	100.00%	100.00%
10 – 14	75.00%	100.00%	100.00%
15 – 19	90.00%	100.00%	100.00%
20+	100.00%	100.00%	100.00%

Disability/Death Participation Rates	
Members Participating Before July 1, 2003	
Duty-Disability	Duty Death-In-Service
100.00%	100.00%

Deferred Vested Member Participation Rates		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
50.00%	100.00%	100.00%

Members Electing Spouse Coverage		
Applies Only to Members with Hazardous Service		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
50.00%	50.00%	50.00%



HEALTH CARE MONTHLY PLAN COSTS: Assumed per capita health care costs were based on past experience and trended based on the assumptions. Following are charts detailing retiree per capita assumptions for the year following the valuation date. The amounts include medical and drug costs. Members under 65 are assumed to elect the LivingWell PPO. For retirees ages 65 and older, the full costs shown are before averaging. The average costs are then normalized to age 65 and age adjusted in calculating liabilities. The dollar amount contribution level is the cost to the system per year of service for members participating on or after July 1, 2003.

Under Age 65 (KEHP) Full Costs as of January 1, 2016				
Tier Elected	LivingWell CDHP	LivingWell PPO	Standard PPO	Standard CDHP
Single	\$ 702.10	\$ 721.14	\$ 677.74	\$ 663.68
Parent Plus	967.18	1,023.04	963.36	930.34
Couple	1,302.74	1,564.20	1,474.84	1,429.26
Family	1,453.94	1,738.40	1,640.84	1,591.52
Family C-R	810.00	865.64	814.72	792.90

Age 65 and Older Full Costs as of January 1, 2016	
Kentucky Retirement System Health Plan - Medical Only	\$158.25
Kentucky Retirement System Health Plan - Essential	77.76
Kentucky Retirement System Health Plan - Premium	244.25

Age 65 and Older Average Cost as of the Valuation Date Based on Actual Retiree Elections	
Non-Hazardous	Hazardous
\$218.33	\$227.19

Dollar Amount Contribution Level Per Year of Service as of July 1, 2015	
Applies to members participating on or after July 1, 2003	
Non-Hazardous	Hazardous
\$12.80	\$19.19



SCHEDULE D

SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS

This schedule summarizes the major retirement benefit provisions of KERS included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year: July 1 through June 30

Non-Hazardous Normal Retirement:

Members whose participation began before 8/1/2004

<i>Age Requirement</i>	65
<i>Service Requirement</i>	At least one month of non-hazardous duty service credit
<i>Amount</i>	<p>If a member has at least 48 months of service, the monthly benefit is 1.97% times final average compensation times years of service. For members who were participants in any one of the state retirement systems from January 1, 1998 through January 1, 1999, the benefit factor is 2.00%. For those members who retired between January 1, 1999 and January 31, 2009 with at least 240 months of service, the benefit factor is 2.20%.</p> <p>Final compensation is calculated by taking the average of the highest five (5) fiscal years of salary. If the number of months of service credit during the five (5) year period is less than forty-eight (48), one (1) or more additional fiscal years shall be used.</p> <p>If a member has less than 48 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.</p>

Members whose participation began on or after 8/1/2004, but before 9/1/2008

<i>Age Requirement</i>	65
<i>Service Requirement</i>	At least one month of non-hazardous duty service credit
<i>Amount</i>	<p>If a member has at least 48 months of service, the monthly benefit is 2.00% multiplied by final average compensation, multiplied by years of service.</p> <p>Final compensation is calculated by taking the average of the highest five (5) fiscal years of salary. If the number of months of service credit during the five (5) year period is less than forty-eight (48), one (1) or more additional fiscal years shall be used.</p> <p>If a member has less than 48 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.</p>



Non-Hazardous Normal Retirement (continued):

Members whose participation began on or after 9/1/2008 but before 1/1/2014

Requirement Age 65 with 60 months of non-hazardous duty service credit, or age 57 if age plus service equals at least 87.

Amount The monthly benefit is the following benefit factor based on service credit at retirement plus 2.00% for each year of service greater than 30 years, multiplied by final average compensation, multiplied by years of service.

Service Credit	Benefit Factor
10 years or less	1.10%
10+ – 20 years	1.30%
20+ – 26 years	1.50%
26+ – 30 years	1.75%

Final compensation is calculated by taking the average of the last (not highest) five (5) complete fiscal years of salary. Each fiscal year used to determine final compensation must contain twelve (12) months of service credit.

If a member has less than 60 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.

Members whose participation began on or after 1/1/2014

Requirement Age 65 with 60 months of non-hazardous duty service credit, or age 57 if age plus service equals at least 87.

Amount Each year that a member is an active contributing member to the System, the member and the member's employer will contribute 5.00% and 4.00% of creditable compensation respectively into a hypothetical account. This hypothetical account will earn interest annually on both the member's and employer's contribution at a minimum rate of 4%. If the System's geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year.

Upon retirement the hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or annuitized into a single life annuity option.



Hazardous Normal Retirement:

Members whose participation began before 9/1/2008

- Age Requirement* 55
- Service Requirement* At least one month of hazardous duty service credit
- Amount* If a member has at least 60 months of service, the monthly benefit is 2.49% multiplied by final average compensation, multiplied by years of service.

Final compensation is calculated by taking the average of the highest three (3) fiscal years of salary. If the number of months of service credit during the three (3) year period is less than twenty-four (24), one (1) or more additional fiscal years shall be used.

If a member has less than 60 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.

Members whose participation began on or after 9/1/2008 but before 1/1/2014

- Age Requirement* 60
- Service Requirement* At least 60 months of hazardous duty service credit
- Amount* The monthly benefit is the following benefit factor based on service credit at retirement, multiplied by final average compensation, multiplied by years of service.

Service Credit	Benefit Factor
10 years or less	1.30%
10+ – 20 years	1.50%
20+ – 25 years	2.25%
25+ years	2.50%

Final compensation is calculated by taking the average of the highest three (3) complete fiscal years of salary. Each fiscal year used to determine final compensation must contain twelve (12) months of service credit.

If a member has less than 60 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.



Hazardous Normal Retirement (continued):

Members whose participation began on or after 1/1/2014

<i>Age Requirement</i>	60
<i>Service Requirement</i>	At least 60 months of hazardous duty service credit or 25 or more years of service, with no age requirement
<i>Amount</i>	<p>Each year that a member is an active contributing member to the System, the member and the member's employer will contribute 8.00% and 7.50% of creditable compensation respectively into a hypothetical account. This hypothetical account will earn interest annually on both the member's and employer's contribution at a minimum rate of 4%. If the System's geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year.</p> <p>Upon retirement the hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or annuitized into a single life annuity option.</p>

Non-Hazardous Early Retirement:

Members whose participation began before 9/1/2008

<i>Requirement</i>	Age 55 with 60 months of service or any age with 25 years of service.
<i>Amount</i>	Normal retirement benefit reduced by 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member is younger than age 65 or has less than 27 years of service, whichever is smaller.



Non-Hazardous Early Retirement (continued):

Members whose participation began on or after 9/1/2008 but before 1/1/2014

<i>Requirement</i>	Age 60 with 10 years of service.
<i>Amount</i>	Normal retirement benefit reduced by 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member is younger than age 65, or does not meet the rule of 87 (age plus service) and is younger than age 57, whichever is smaller.

Hazardous Early Retirement:

Members whose participation began before 9/1/2008

<i>Requirement</i>	Age 50 with 15 years of service or any age with 20 years of service.
<i>Amount</i>	Normal retirement benefit reduced by 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member is younger than age 55 or has less than 20 years of service, whichever is smaller.

Members whose participation began on or after 9/1/2008 but before 1/1/2014

<i>Requirement</i>	Age 50 with 15 years of service or any age with 25 years of service.
<i>Amount</i>	Normal retirement benefit reduced by 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member is younger than age 60 or has less than 25 years of service, whichever is smaller.

Non-Hazardous Disability:

<i>Age Requirement</i>	None
<i>Service Requirement</i>	60 months

Members whose participation began before 8/1/2004

Normal retirement benefit except that service credit will be added to total service for the period from the last day of plan employment to the member's 65th birthday or until the combined total service as of the last day of paid employment and added service equals 25 years. The total amount of service credit added shall not exceed the member's actual service credit on the last day of paid employment. For members with at least 25 years of service but less than 27 years of service, total service shall be 27 years. For employees with 27 or more years of service credit, actual service will be used.



Non-Hazardous Disability (continued):

A contributing member in a non-hazardous position who is disabled in the line of duty is entitled to a retirement benefit of not less than 25% of the member's final monthly rate of pay plus 10% of the member's final monthly rate of pay for each dependent child. The maximum dependent child's benefit is 40% of the member's final monthly rate of pay.

Members whose participation began on or after 8/1/2004 but before 1/1/2014

Normal retirement benefit based on actual service with no penalty or, if larger, 20% of the Final Rate of Pay. May apply for disability even after normal retirement age.

Members whose participation began on or after 1/1/2014

The hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or an annuity equal to the larger of 20% of the member's monthly final rate of pay or the annuitized hypothetical account into a single life annuity option.

Hazardous Disability:

Age Requirement

None

Service Requirement

60 months (waived if in line of duty disability)

Members whose participation began before 8/1/2004

Normal retirement benefit except if the member's total service credit is less than 20 years, service credit will be added for the period from the last day of paid employment to the member's 55th birthday.

The maximum service credit added will not exceed the total service the member had on this last day of paid employment and the maximum service credit for calculating his retirement allowance, including total service and service added will not exceed 20 years. May not apply if eligible for an unreduced retirement allowance.

A member in a hazardous position who is disabled in the line of duty is entitled to the normal retirement benefit based on years of service and final compensation determined as of the date of disability (no penalty), except that the monthly retirement allowance payable shall not be less than 25% of the member's monthly final rate of pay. Each dependent child shall receive 10% of the disabled member's monthly final rate of pay; however the total maximum dependent children's benefit shall not exceed 40% of the member's monthly final rate of pay.



Hazardous Disability (continued):

Members whose participation began on or after 8/1/2004 but before 1/1/2014

Normal retirement benefit based on years of service and final compensation determined as of the date of disability (no penalty) or, if larger, 25% of the member's monthly final rate of pay. May apply for disability even after normal retirement age.

Members whose participation began on or after 1/1/2014

The hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or an annuity equal to the larger of 25% of the member's monthly final rate of pay or the annuitized hypothetical account into a single life annuity option.

Vesting:

Members whose participation began before 9/1/2008

Age Requirement

None

Service Requirement

60 months. Service purchased after August 1, 2004 does not count toward vesting insurance benefits. Service purchased by employees who began participating on or after August 1, 2004 does not count toward vesting retirement benefits. Recontribution of refunds and omitted service purchases are the exception to this rule for service requirement.

Amount

Normal retirement benefit deferred to normal retirement age or reduced benefit payable at early retirement age.

Normal Retirement Age

65 for non-hazardous members and 55 for hazardous members.

Members whose participation began on or after 9/1/2008 but before 1/1/2014

Age Requirement

None

Service Requirement

60 months. Service purchased after August 1, 2004 does not count toward vesting insurance benefits.

Service purchased by employees who began participating on or after August 1, 2004 does not count toward vesting retirement benefits. Recontribution of refunds and omitted service purchases are the exception to this rule for service requirement.

Amount

Normal retirement benefit deferred to normal retirement age or reduced benefit payable at early retirement age.



Vesting (continued):

<i>Normal Retirement Age</i>	65 for non-hazardous members and 60 for hazardous members.
<i>Members whose participation began on or after 1/1/2014</i>	
<i>Age Requirement</i>	None
<i>Service Requirement</i>	60 months.
<i>Amount</i>	Upon termination the hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or the member can elect to leave the hypothetical account balance in the System. If the member does not withdraw the account balance, it will continue to earn 4% interest. Upon reaching normal retirement age the member can apply for retirement and receive the account balance as a lump sum payment or annuitize the account balance into a single life annuity.

Pre-Retirement Death Benefit (not in line of duty):

Members whose participation began before 1/1/2014

<i>Requirement</i>	Eligible for Normal or Early Retirement, or any age in active employment with 60 months service, or any age and not in active employment with at least 144 months of service.
<i>Amount</i>	Benefit equal to the benefit the member would have received had the member retired on the day before the date of death and elected a 100% joint and survivor form. Benefit is actuarially reduced if member is less than normal retirement age at the date of death.

Members whose participation began on or after 1/1/2014

<i>Requirement</i>	60 months service
<i>Amount</i>	The maximum of the benefit equal to the benefit the member would have received had the member retired on the day before the date of death.



Spouse's Pre-Retirement Death Benefit (in line of duty):

<i>Requirement</i>	None
<i>Amount</i>	The spouse may choose (1) a \$10,000 lump sum payment and monthly payments of 25% of the member's final monthly rate of pay or (2) benefit options offered under death not in line of duty.

Dependent Non-Spouse's Death Benefit (in line of duty) – Hazardous Plan:

<i>Requirement</i>	None
<i>Amount</i>	The non-spouse may choose (1) a \$10,000 lump sum payment or (2) benefit options offered under death not in line of duty.

Dependent Child's Death Benefit (in line of duty):

<i>Requirement</i>	None
<i>Amount</i>	10% of member's final monthly rate of pay. Dependent child payments cannot exceed 40% of the member's monthly final rate of pay.

Post-Retirement Death Benefit:

<i>Requirement</i>	Retired member in receipt of monthly benefit based on at least 48 months or more of combined service with KERS, CERS or SPRS.
<i>Amount</i>	\$5,000

Non-Hazardous Member Contributions:

<i>Members whose participation began before 9/1/2008</i>	5% of all creditable compensation. Interest paid on the members' accounts is currently 2.5% shall not be less than 2.0%. Member entitled to a full refund of contributions with interest.
--	---

<i>Members whose participation began on or after 9/1/2008</i>	6% of all creditable compensation, with 5% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Interest paid on the members' accounts will be set at 2.5%. Member entitled to a full refund of contributions and interest in their individual account, however, the 1% contributed to the insurance fund is non-refundable.
---	--



Non-Hazardous Member Contributions (continued):

Members whose participation began on or after 1/1/2014

6% of all creditable compensation, with 5% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Member entitled to a full refund of contributions and interest on the member's portion of the hypothetical account, however, the 1% contributed to the insurance fund is non-refundable.

Hazardous Member Contributions:

Members whose participation began before 9/1/2008

8% of all creditable compensation. Interest paid on the members' accounts is currently set at 2.5% and per statute, shall not be less than 2.0%. Member entitled to a full refund of contributions with interest.

Members whose participation began on or after 9/1/2008 and up to 1/1/2014

9% of all creditable compensation, with 8% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Interest paid on the members' accounts will be set at 2.5%. Member entitled to a full refund of contributions and interest in their individual account, however, the 1% contributed to the insurance fund is non-refundable.

Members whose participation began on or after 1/1/2014

9% of all creditable compensation, with 8% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Member entitled to a full refund of contributions and interest on the member's portion of the hypothetical account, however, the 1% contributed to the insurance fund is non-refundable.



Non-Hazardous Insurance Plan for Retirees:

Members whose participation began before 7/1/2003

Requirement

In receipt of a monthly retirement allowance.

Amount

The Retirement System pays a portion of lifetime medical premiums for retirees based on the retired member's years of service credit. The percentage of the monthly contribution rate paid is show in the following table.

Service Credit	Percentage Paid*
0 – 3 years	0%
4 – 9 years	25%
10 – 14 years	50%
15 – 19 years	75%
20 or more years	100%

**100% of the monthly contribution is paid towards the health insurance for a retired member who is totally disabled from any employment as a result of a duty-related injury regardless of actual service. 100% of the monthly contribution is paid toward health insurance for the spouse and dependent children of a member who dies as a result of a duty related injury, regardless of the deceased member's service. The insurance benefit will be provided as long as the spouse and dependent children are eligible for a monthly retirement benefit.*

Members whose participation began on or after 7/1/2003, but before 9/1/2008

Requirement

Monthly retirement allowance with at least 120 months of service at retirement.

Amount

The Retirement System pays \$12.80 per month for each year of earned service for retirees. This amount is shown as of the valuation date and is increased annually by 1.5%.

Members whose participation began on or after 9/1/2008

Requirement

Monthly retirement allowance with at least 180 months of service at retirement.

Amount

The Retirement System pays \$12.80 per month for each year of earned service for retirees. This amount will be increased annually by 1.5%.



Hazardous Insurance Plan for Retirees:

Members whose participation began before 7/1/2003

Requirement

In receipt of a monthly retirement allowance.

Amount

The Retirement System pays a portion of lifetime medical premiums for retirees, their spouse and their dependents based on the retired member's years of service credit. The percentage of the monthly contribution rate paid is show in the following table.

Service Credit	Percentage Paid*
0 – 3 years	0%
4 – 9 years	25%
10 – 14 years	50%
15 – 19 years	75%
20 or more years	100%

**100% of the monthly contribution is paid towards the health insurance for a member, member's spouse and dependents if the member is disabled in the line of duty as a result of a duty-related injury, regardless of actual service. 100% of the monthly contribution is paid toward health insurance for the spouse and dependent children of a member who dies in the line of duty regardless of the deceased member's service. The insurance benefit will be provided as long as the spouse and dependent children are eligible for a monthly retirement benefit.*

Members whose participation began on or after 7/1/2003, but before 9/1/2008

Requirement

Monthly retirement allowance with at least 120 months of service at retirement.

Amount

The Retirement System pays \$19.19 per month for each year of earned service for retirees. Upon the retiree's death, the surviving spouse will receive \$12.80 per month for each year of earned. These amounts are shown as of the valuation date and are increased annually by 1.5%.

Members whose participation began on or after 9/1/2008

Requirement

Monthly retirement allowance with at least 180 months of service at retirement.

Amount

The Retirement System pays \$19.19 per month for each year of earned service for retirees. Upon the retiree's death, the surviving spouse will receive \$12.80 per month for each year of earned. These amounts will be increased annually by 1.5%.



SCHEDULE E

DETAILED TABULATIONS OF THE DATA

**Schedule of Non-Hazardous Retired Members Added to and Removed From Rolls
Last Six Fiscal Years**

Year Ending June 30	2010	2011	2012	2013	2014	2015
			<u>Number</u>			
Beginning of Year	37,883	37,945	38,597	39,226	40,194	41,223
Added	1,162	1,592	1,707	1,982	2,067	3,169
Removed	1,100	940	1,078	1,014	1,038	1,094
End of Year	37,945	38,597	39,226	40,194	41,223	42,269
			<u>Annual Allowances*</u>			
Beginning of Year	\$ 812,559,070	\$ 801,881,911	\$ 821,197,278	\$ 844,880,945	\$ 872,139,782	\$ 888,430,310
Added	865,483	31,930,847	37,458,130	41,468,079	31,433,028	32,433,375
Removed	11,542,643	12,615,480	13,774,463	14,209,242	15,142,500	14,902,459
End of Year	\$ 801,881,911	\$ 821,197,278	\$ 844,880,945	\$ 872,139,782	\$ 888,430,310	\$ 905,961,226
% Increase in Allowances	(1.31)%	2.41%	2.88%	3.23%	1.87%	1.97%
Average Annual Allowance	\$ 21,133	\$ 21,276	\$ 21,539	\$ 21,698	\$ 21,552	\$ 21,433

* The annual allowances shown for 2013 and later include allowances for hazardous members who are receiving a portion of benefit from the non-hazardous system.



**Schedule of Hazardous Retired Members Added to and Removed From Rolls
Last Six Fiscal Years**

Year Ending June 30	2010	2011	2012	2013	2014	2015
	<u>Number</u>					
Beginning of Year	2,648	2,835	3,064	3,253	3,430	3,620
Added	282	288	243	229	256	393
Removed	95	59	54	52	66	65
End of Year	2,835	3,064	3,253	3,430	3,620	3,758
	<u>Annual Allowances</u>					
Beginning of Year	\$ 38,695,501	\$ 41,114,800	\$ 45,609,229	\$ 49,231,205	\$ 51,122,456	\$ 54,271,718
Added	3,315,361	5,012,933	4,213,360	2,390,928	3,761,697	3,144,016
Removed	896,062	518,504	591,384	499,677	612,435	984,635
End of Year	\$ 41,114,800	\$ 45,609,229	\$ 49,231,205	\$ 51,122,456	\$ 54,271,718	\$ 56,431,099
% Increase in Allowances	6.25%	10.93%	7.94%	3.84%	6.16%	3.98%
Average Annual Allowance	\$ 14,503	\$ 14,886	\$ 15,134	\$ 14,905	\$ 14,992	\$ 15,016



Non-Hazardous Retired Lives Summary June 30, 2015

	Male Lives		Female Lives		Total	
	Number	Monthly Benefits	Number	Monthly Benefits	Number	Monthly Benefits
Basic Form	3,694	\$ 6,751,823.38	10,736	\$ 15,872,249.83	14,430	\$ 22,624,073.21
Straight Life (Old Plan)	0	0.00	0	0.00	0	0.00
Joint & Survivor						
100% to Beneficiary	2,009	3,774,214.24	883	1,106,032.08	2,892	4,880,246.32
66-2/3% to Beneficiary	782	2,260,446.51	474	980,407.69	1,256	3,240,854.20
50% to Beneficiary	1,122	2,860,975.83	1,348	2,749,061.18	2,470	5,610,037.01
Pop-up Option	3,797	9,399,074.45	3,372	6,669,421.53	7,169	16,068,495.98
10 Years Certain	0	0.00	0	0.00	0	0.00
10 Years Certain & Life	922	1,619,661.11	2,076	3,157,126.16	2,998	4,776,787.27
Social Security Option						
Age 62 Basic	402	997,824.99	960	1,743,639.00	1,362	2,741,463.99
Age 62 Survivorship	808	1,839,490.00	585	1,089,989.73	1,393	2,929,479.73
Partial Deferred (Old Plan)	0	0.00	0	0.00	0	0.00
Widows Age 60	0	0.00	0	0.00	0	0.00
Dependent Child	0	0.00	0	0.00	0	0.00
Refund	0	0.00	0	0.00	0	0.00
15 Years Certain & Life	402	648,323.84	549	836,829.65	951	1,485,153.49
20 Years Certain & Life	398	877,030.51	558	896,756.57	956	1,773,787.08
5 Years Certain	0	0.00	0	0.00	0	0.00
PLSO 12 Month Basic	82	134,530.89	298	451,479.99	380	586,010.88
PLSO 24 Month Basic	36	42,772.42	160	202,669.85	196	245,442.27
PLSO 36 Month Basic	150	133,464.60	408	308,031.64	558	441,496.24
PLSO 12 Month Survivor	107	227,600.43	102	174,083.95	209	401,684.38
PLSO 24 Month Survivor	85	133,057.14	78	114,819.45	163	247,876.59
PLSO 36 Month Survivor	237	256,602.72	157	135,169.64	394	391,772.36
Total	15,033	\$ 31,956,893.06	22,744	\$ 36,487,767.94	37,777	\$ 68,444,661.00



Hazardous Retired Lives Summary June 30, 2015

	Male Lives		Female Lives		Total	
	Number	Monthly Benefits	Number	Monthly Benefits	Number	Monthly Benefits
Basic Form	546	\$ 623,173.09	417	\$ 441,902.23	963	\$ 1,065,075.32
Straight Life (Old Plan)	0	0.00	0	0.00	0	0.00
Joint & Survivor						
100% to Beneficiary	270	321,675.94	32	35,992.59	302	357,668.53
66-2/3% to Beneficiary	95	124,113.01	25	28,470.28	120	152,583.29
50% to Beneficiary	151	226,570.36	53	82,243.85	204	308,814.21
Pop-up Option	790	1,178,355.10	149	190,433.91	939	1,368,789.01
10 Years Certain	38	50,671.18	8	9,483.17	46	60,154.35
10 Years Certain & Life	108	122,407.40	67	59,303.30	175	181,710.70
Social Security Option						
Age 62 Basic	58	102,424.11	32	54,945.63	90	157,369.74
Age 62 Survivorship	144	293,499.19	18	26,316.41	162	319,815.60
Partial Deferred (Old Plan)	0	0.00	0	0.00	0	0.00
Widows Age 60	0	0.00	0	0.00	0	0.00
Dependent Child	0	0.00	0	0.00	0	0.00
Refund	0	0.00	0	0.00	0	0.00
15 Years Certain & Life	46	56,665.05	16	15,177.42	62	71,842.47
20 Years Certain & Life	55	75,938.29	25	35,627.47	80	111,565.76
5 Years Certain	0	0.00	0	0.00	0	0.00
PLSO 12 Month Basic	11	10,996.56	13	10,878.00	24	21,874.56
PLSO 24 Month Basic	15	15,174.89	9	7,947.86	24	23,122.75
PLSO 36 Month Basic	46	39,101.25	24	20,365.85	70	59,467.10
PLSO 12 Month Survivor	21	27,586.95	6	5,150.84	27	32,737.79
PLSO 24 Month Survivor	19	27,990.82	9	11,029.16	28	39,019.98
PLSO 36 Month Survivor	47	46,297.04	15	18,695.05	62	64,992.09
Total	2,460	\$ 3,342,640.23	918	\$ 1,053,963.02	3,378	\$ 4,396,603.25



Non-Hazardous Beneficiary Lives Summary June 30, 2015

	Male Lives		Female Lives		Total	
	Number	Monthly Benefits	Number	Monthly Benefits	Number	Monthly Benefits
Basic Form	11	\$ 6,472.34	26	\$ 28,627.42	37	\$ 35,099.76
Straight Life (Old Plan)	0	0.00	0	0.00	0	0.00
Joint & Survivor						
100% to Beneficiary	286	240,679.96	1,507	1,592,664.10	1,793	1,833,344.06
66-2/3% to Beneficiary	46	51,612.90	325	361,214.09	371	412,826.99
50% to Beneficiary	136	103,829.36	445	321,638.85	581	425,468.21
Pop-up Option	148	232,355.30	583	951,704.41	731	1,184,059.71
10 Years Certain	89	70,741.25	88	64,315.24	177	135,056.49
10 Years Certain & Life	27	27,939.89	31	34,592.49	58	62,532.38
Social Security Option						
Age 62 Basic	1	272.14	9	11,008.65	10	11,280.79
Age 62 Survivorship	60	90,697.76	280	517,510.81	340	608,208.57
Partial Deferred (Old Plan)	0	0.00	0	0.00	0	0.00
Widows Age 60	0	0.00	4	1,500.58	4	1,500.58
Dependent Child	0	0.00	0	0.00	0	0.00
Refund	3	2,135.64	7	8,134.18	10	10,269.82
15 Years Certain & Life	14	18,496.87	46	64,497.76	60	82,994.63
20 Years Certain & Life	23	31,188.28	71	126,372.04	94	157,560.32
5 Years Certain	51	52,570.42	52	41,085.99	103	93,656.41
PLSO 12 Month Basic	0	0.00	1	1,791.60	1	1,791.60
PLSO 24 Month Basic	0	0.00	0	0.00	0	0.00
PLSO 36 Month Basic	0	0.00	2	3,357.39	2	3,357.39
PLSO 12 Month Survivor	5	8,931.63	16	25,203.66	21	34,135.29
PLSO 24 Month Survivor	11	12,668.80	19	13,422.70	30	26,091.50
PLSO 36 Month Survivor	18	13,121.41	51	54,779.42	69	67,900.83
Total	929	\$ 963,713.95	3,563	\$ 4,223,421.38	4,492	\$ 5,187,135.33



Hazardous Beneficiary Lives Summary June 30, 2015

	Male Lives		Female Lives		Total	
	Number	Monthly Benefits	Number	Monthly Benefits	Number	Monthly Benefits
Basic Form	2	\$ 1,051.91	3	\$ 1,857.03	5	\$ 2,908.94
Straight Life (Old Plan)	0	0.00	0	0.00	0	0.00
Joint & Survivor						
100% to Beneficiary	10	4,162.37	131	95,844.42	141	100,006.79
66-2/3% to Beneficiary	0	0.00	18	8,090.57	18	8,090.57
50% to Beneficiary	2	1,450.30	28	12,494.57	30	13,944.87
Pop-up Option	11	10,157.51	81	72,693.99	92	82,851.50
10 Years Certain	3	3,404.88	17	13,950.13	20	17,355.01
10 Years Certain & Life	4	3,098.69	2	1,122.75	6	4,221.44
Social Security Option						
Age 62 Basic	0	0.00	0	0.00	0	0.00
Age 62 Survivorship	0	0.00	27	47,797.10	27	47,797.10
Partial Deferred (Old Plan)	0	0.00	0	0.00	0	0.00
Widows Age 60	0	0.00	0	0.00	0	0.00
Dependent Child	0	0.00	0	0.00	0	0.00
Refund	1	262.55	3	2,151.81	4	2,414.36
15 Years Certain & Life	3	1,422.71	6	3,186.33	9	4,609.04
20 Years Certain & Life	0	0.00	5	2,328.34	5	2,328.34
5 Years Certain	1	634.60	3	1,302.48	4	1,937.08
PLSO 12 Month Basic	0	0.00	0	0.00	0	0.00
PLSO 24 Month Basic	0	0.00	0	0.00	0	0.00
PLSO 36 Month Basic	0	0.00	1	125.74	1	125.74
PLSO 12 Month Survivor	0	0.00	3	3,344.12	3	3,344.12
PLSO 24 Month Survivor	1	995.41	3	2,021.84	4	3,017.25
PLSO 36 Month Survivor	2	706.28	9	10,329.90	11	11,036.18
Total	40	\$ 27,347.21	340	\$ 278,641.12	380	\$ 305,988.33



**Non-Hazardous Members
Retired and Beneficiary Information June 30, 2015
Tabulated by Attained Ages**

Attained Age	Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 45	38	\$ 768,838	29	\$ 359,797	95	\$ 617,027	162	\$ 1,745,662
45-49	451	\$ 11,860,925	92	\$ 1,441,952	39	\$ 470,958	582	\$ 13,773,835
50-54	1,619	\$ 46,248,053	166	\$ 2,357,480	124	\$ 1,765,543	1,909	\$ 50,371,076
55-59	4,109	\$ 117,452,704	267	\$ 3,605,427	218	\$ 3,046,380	4,594	\$ 124,104,511
60-64	7,067	\$ 181,076,208	394	\$ 5,306,557	364	\$ 6,501,062	7,825	\$ 192,883,827
65-69	8,754	\$ 195,996,103	385	\$ 4,857,730	507	\$ 9,133,847	9,646	\$ 209,987,680
70-74	5,689	\$ 114,236,855	254	\$ 3,100,310	538	\$ 9,301,283	6,481	\$ 126,638,448
75-79	3,726	\$ 66,357,625	191	\$ 2,188,882	542	\$ 8,078,072	4,459	\$ 76,624,579
80-84	2,311	\$ 35,338,257	85	\$ 906,308	541	\$ 8,016,658	2,937	\$ 44,261,223
85-89	1,397	\$ 19,659,343	37	\$ 360,404	543	\$ 7,624,089	1,977	\$ 27,643,836
90 & Over	706	\$ 7,784,311	10	\$ 71,869	981	\$ 7,690,706	1,697	\$ 15,546,886
Totals	35,867	\$ 796,779,222	1,910	\$ 24,556,716	4,492	\$ 62,245,625	42,269	\$ 883,581,563



**Hazardous Members
Retired and Beneficiary Information June 30, 2015
Tabulated by Attained Ages**

Attained Age	Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 45	27	\$ 517,235	13	\$ 161,596	16	\$ 75,930	56	\$ 754,761
45-49	182	\$ 3,961,540	18	\$ 203,632	7	\$ 91,988	207	\$ 4,257,160
50-54	304	\$ 5,991,557	26	\$ 250,024	10	\$ 123,588	340	\$ 6,365,169
55-59	505	\$ 10,051,273	25	\$ 233,500	31	\$ 341,481	561	\$ 10,626,254
60-64	679	\$ 11,194,560	30	\$ 227,917	49	\$ 647,439	758	\$ 12,069,916
65-69	818	\$ 11,835,271	21	\$ 165,169	57	\$ 634,108	896	\$ 12,634,548
70-74	397	\$ 4,833,025	9	\$ 46,086	64	\$ 542,592	470	\$ 5,421,703
75-79	191	\$ 2,023,682	6	\$ 28,701	55	\$ 586,747	252	\$ 2,639,130
80-84	80	\$ 593,034	4	\$ 9,617	48	\$ 278,483	132	\$ 881,134
85-89	37	\$ 278,646			27	\$ 181,166	64	\$ 459,812
90 & Over	6	\$ 153,175			16	\$ 168,338	22	\$ 321,513
Totals	3,226	\$ 51,432,998	152	\$ 1,326,242	380	\$ 3,671,860	3,758	\$ 56,431,100



**Total Non-Hazardous Active Members as of June 30, 2015
Tabulated by Attained Ages and Years of Service**

Attained Age	Years of Service to Valuation Date								Totals
	0-4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 26	27 - 29	30+	
Under 20	20								20
Avg Pay	\$17,737								\$17,737
20-24	886	1							887
Avg Pay	\$23,391	\$33,425							\$23,403
25-29	2,664	439	5						3,108
Avg Pay	\$28,960	\$32,731	\$29,684						\$29,494
30-34	2,141	1,708	445	21					4,315
Avg Pay	\$31,287	\$36,816	\$37,865	\$36,062					\$34,177
35-39	1,535	1,522	1,479	539	24				5,099
Avg Pay	\$31,952	\$38,305	\$42,376	\$43,306	\$47,931				\$38,148
40-44	1,304	1,213	1,298	1,212	418	43	18	4	5,510
Avg Pay	\$32,339	\$39,112	\$43,735	\$45,002	\$47,814	\$48,845	\$59,836	\$87,422	\$40,733
44-49	1,141	1,105	1,079	1,020	928	236	140	59	5,708
Avg Pay	\$31,597	\$38,396	\$44,761	\$46,435	\$49,845	\$49,274	\$56,690	\$61,249	\$42,673
50-54	1,005	1,033	1,030	865	740	283	291	195	5,442
Avg Pay	\$32,949	\$36,903	\$42,453	\$45,858	\$49,486	\$51,184	\$55,774	\$60,909	\$42,970
55-59	702	977	934	807	603	224	195	161	4,603
Avg Pay	\$32,449	\$38,477	\$40,153	\$44,954	\$47,580	\$48,259	\$56,113	\$62,583	\$42,292
60-64	427	628	666	567	370	136	120	112	3,026
Avg Pay	\$35,924	\$40,253	\$41,579	\$43,715	\$48,348	\$50,916	\$53,633	\$62,896	\$43,420
65-69	102	235	257	194	116	28	38	36	1,006
Avg Pay	\$40,162	\$44,643	\$41,651	\$46,324	\$55,042	\$48,604	\$56,458	\$65,539	\$46,252
70 & over	32	59	78	69	49	18	13	14	332
Avg Pay	\$36,039	\$39,453	\$38,113	\$49,389	\$53,186	\$44,090	\$60,320	\$69,652	\$45,243
Totals	11,959	8,920	7,271	5,294	3,248	968	815	581	39,056
Avg Pay	\$30,853	\$38,034	\$42,269	\$45,170	\$49,133	\$49,693	\$55,892	\$62,471	\$39,539



**Total Hazardous Active Members as of June 30, 2015
Tabulated by Attained Ages and Years of Service**

Attained Age	Years of Service to Valuation Date								Totals
	0-4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 26	27 - 29	30+	
Under 20 Avg Pay									
20-24 Avg Pay	237 \$23,433								237 \$23,433
25-29 Avg Pay	498 \$27,179	63 \$32,539							561 \$27,781
30-34 Avg Pay	320 \$28,166	211 \$33,457	44 \$36,244						575 \$30,726
35-39 Avg Pay	150 \$28,884	154 \$34,290	155 \$36,682	39 \$39,649	1 \$36,516				499 \$33,831
40-44 Avg Pay	160 \$28,351	126 \$36,108	137 \$38,552	133 \$41,991	26 \$47,190				582 \$36,390
44-49 Avg Pay	133 \$27,905	114 \$33,652	108 \$36,597	85 \$41,865	45 \$47,547	6 \$63,485	1 \$55,249	1 \$44,796	493 \$35,861
50-54 Avg Pay	113 \$28,471	86 \$35,423	76 \$36,238	64 \$40,473	27 \$46,346	11 \$53,618	6 \$56,491	1 \$64,218	384 \$36,074
55-59 Avg Pay	72 \$28,869	67 \$33,784	79 \$36,060	57 \$40,850	13 \$47,907	4 \$60,395		4 \$61,752	296 \$35,914
60-64 Avg Pay	46 \$28,263	50 \$35,068	46 \$38,441	31 \$37,662	14 \$43,967	4 \$46,616	1 \$48,383	2 \$60,357	194 \$35,879
65-69 Avg Pay	3 \$38,807	16 \$41,438	15 \$37,813	11 \$46,940	2 \$74,676	2 \$49,752	1 \$52,436		50 \$43,285
70 & over Avg Pay	2 \$24,952	2 \$21,001	6 \$33,219	4 \$47,329		1 \$45,591			15 \$35,075
Totals Avg Pay	1,734 \$27,361	889 \$34,358	666 \$37,015	424 \$41,230	128 \$47,204	28 \$55,138	9 \$55,002	8 \$59,592	3,886 \$33,114



SCHEDULE F

SENSITIVITY ANALYSIS

The valuation results are projections based on the actuarial assumptions. Actual experience will differ from these assumptions, either increasing or decreasing cost. The charts on the following pages provide a simple analysis on how the costs are sensitive to changes to the assumed discount rate, the assumed inflation rate and the rate of payroll growth. The charts show the actuarial accrued liability, the unfunded liability, the funded ratio and the employer contribution rate under the following scenarios:

- The discount rate assumption sensitivity analysis shows the valuation results with the baseline discount rate assumption, 7.50%, together with a decrease in the discount rate to 6.50% and an increase in the discount rate to 8.50%. Under this scenario, the underlying inflation rate assumption is held constant at 3.25% and the payroll growth assumption is held constant at 4.00%.
- The inflation assumption sensitivity analysis shows the valuation results with the baseline underlying inflation rate assumption, 3.25%, together with decreases in the inflation rate to 3.00% and 2.75%. Under this scenario, the decrease in the underlying inflation rate assumption leads to corresponding decreases in the discount rate, the payroll growth assumption and the healthcare trend assumption for members hired before 7/1/2003.
- The payroll growth assumption sensitivity analysis shows the valuation results with the baseline underlying payroll growth assumption, 4.00%, together with decreases in the payroll growth assumption to 2.00% and 0.00%. Under this scenario, all other assumptions, including the individual member salary scale, are held constant so that the only impact is in the amortization of the unfunded liability, leading to higher employer contribution rates.



**NON-HAZARDOUS
ASSUMED DISCOUNT RATE SENSITIVITY ANALYSIS**

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
Retirement			
Actuarial Accrued Liability	\$ 13,627,857,276	\$ 12,359,672,849	\$ 11,286,839,300
Actuarial Value of Assets	<u>2,350,989,940</u>	<u>2,350,989,940</u>	<u>2,350,989,940</u>
Unfunded Liability	\$ 11,276,867,336	\$ 10,008,682,909	\$ 8,935,849,360
Funded Ratio	17.25%	19.02%	20.83%
Contribution Rate	40.88%	38.93%	37.46%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%
Insurance			
Actuarial Accrued Liability	\$ 2,722,781,798	\$ 2,413,705,252	\$ 2,157,244,101
Actuarial Value of Assets	<u>695,018,262</u>	<u>695,018,262</u>	<u>695,018,262</u>
Unfunded Liability	\$ 2,027,763,536	\$ 1,718,686,990	\$ 1,462,225,839
Funded Ratio	25.53%	28.79%	32.22%
Contribution Rate	9.44%	8.35%	7.44%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%
KERS Non-Hazardous Total			
Actuarial Accrued Liability	\$ 16,350,639,074	\$ 14,773,378,101	\$ 13,444,083,401
Actuarial Value of Assets	<u>3,046,008,202</u>	<u>3,046,008,202</u>	<u>3,046,008,202</u>
Unfunded Liability	\$ 13,304,630,872	\$ 11,727,369,899	\$ 10,398,075,199
Funded Ratio	18.63%	20.62%	22.66%
Contribution Rate	50.32%	47.28%	44.90%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%



**NON-HAZARDOUS
INFLATION ASSUMPTION SENSITIVITY ANALYSIS**

	Valuation Results	Decrease Inflation Rate 25 basis points	Decrease Inflation Rate 50 basis points
Retirement			
Actuarial Accrued Liability	\$ 12,359,672,849	\$ 12,630,546,443	\$ 12,915,582,119
Actuarial Value of Assets	<u>2,350,989,940</u>	<u>2,350,989,940</u>	<u>2,350,989,940</u>
Unfunded Liability	\$ 10,008,682,909	\$ 10,279,556,503	\$ 10,564,592,179
Funded Ratio	19.02%	18.61%	18.20%
Contribution Rate	38.93%	40.23%	41.59%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%
Insurance			
Actuarial Accrued Liability	\$ 2,413,705,252	\$ 2,420,702,362	\$ 2,428,129,859
Actuarial Value of Assets	<u>695,018,262</u>	<u>695,018,262</u>	<u>695,018,262</u>
Unfunded Liability	\$ 1,718,686,990	\$ 1,725,684,100	\$ 1,733,111,597
Funded Ratio	28.79%	28.71%	28.62%
Contribution Rate	8.35%	8.42%	8.50%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%
KERS Non-Hazardous Total			
Actuarial Accrued Liability	\$ 14,773,378,101	\$ 15,051,248,805	\$ 15,343,711,978
Actuarial Value of Assets	<u>3,046,008,202</u>	<u>3,046,008,202</u>	<u>3,046,008,202</u>
Unfunded Liability	\$ 11,727,369,899	\$ 12,005,240,603	\$ 12,297,703,776
Funded Ratio	20.62%	20.24%	19.85%
Contribution Rate	47.28%	48.65%	50.09%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%



**NON-HAZARDOUS
PAYROLL GROWTH ASSUMPTION SENSITIVITY ANALYSIS**

	Valuation Results	Decrease Payroll Growth 2%	No Payroll Growth
Retirement			
Actuarial Accrued Liability	\$ 12,359,672,849	\$ 12,359,672,849	\$ 12,359,672,849
Actuarial Value of Assets	<u>2,350,989,940</u>	<u>2,350,989,940</u>	<u>2,350,989,940</u>
Unfunded Liability	\$ 10,008,682,909	\$ 10,008,682,909	\$ 10,008,682,909
Funded Ratio	19.02%	19.02%	19.02%
Contribution Rate	38.93%	48.00%	58.40%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%
Insurance			
Actuarial Accrued Liability	\$ 2,413,705,252	\$ 2,413,705,252	\$ 2,413,705,252
Actuarial Value of Assets	<u>695,018,262</u>	<u>695,018,262</u>	<u>695,018,262</u>
Unfunded Liability	\$ 1,718,686,990	\$ 1,718,686,990	\$ 1,718,686,990
Funded Ratio	28.79%	28.79%	28.79%
Contribution Rate	8.35%	9.74%	11.30%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%
KERS Non-Hazardous Total			
Actuarial Accrued Liability	\$ 14,773,378,101	\$ 14,773,378,101	\$ 14,773,378,101
Actuarial Value of Assets	<u>3,046,008,202</u>	<u>3,046,008,202</u>	<u>3,046,008,202</u>
Unfunded Liability	\$ 11,727,369,899	\$ 11,727,369,899	\$ 11,727,369,899
Funded Ratio	20.62%	20.62%	20.62%
Contribution Rate	47.28%	57.74%	69.70%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%



**HAZARDOUS
ASSUMED DISCOUNT RATE SENSITIVITY ANALYSIS**

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
Retirement			
Actuarial Accrued Liability	\$ 993,666,440	\$ 895,433,387	\$ 813,020,323
Actuarial Value of Assets	<u>556,687,757</u>	<u>556,687,757</u>	<u>556,687,757</u>
Unfunded Liability	\$ 436,978,683	\$ 338,745,630	\$ 256,332,566
Funded Ratio	56.02%	62.17%	68.47%
Contribution Rate	26.30%	21.08%	16.42%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%
Insurance			
Actuarial Accrued Liability	\$ 424,497,259	\$ 374,904,234	\$ 334,316,325
Actuarial Value of Assets	<u>451,514,191</u>	<u>451,514,191</u>	<u>451,514,191</u>
Unfunded Liability	\$ (27,016,932)	\$ (76,609,957)	\$ (117,197,866)
Funded Ratio	106.36%	120.43%	135.06%
Contribution Rate	6.59%	2.74%	-0.76%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%
KERS Hazardous Total			
Actuarial Accrued Liability	\$ 1,418,163,699	\$ 1,270,337,621	\$ 1,147,336,648
Actuarial Value of Assets	<u>1,008,201,948</u>	<u>1,008,201,948</u>	<u>1,008,201,948</u>
Unfunded Liability	\$ 409,961,751	\$ 262,135,673	\$ 139,134,700
Funded Ratio	71.09%	79.36%	87.87%
Contribution Rate	32.89%	23.82%	15.66%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%



**HAZARDOUS
INFLATION ASSUMPTION SENSITIVITY ANALYSIS**

	Valuation Results	Decrease Inflation Rate 25 basis points	Decrease Inflation Rate 50 basis points
Retirement			
Actuarial Accrued Liability	\$ 895,433,387	\$ 919,056,850	\$ 945,790,790
Actuarial Value of Assets	<u>556,687,757</u>	<u>556,687,757</u>	<u>556,687,757</u>
Unfunded Liability	\$ 338,745,630	\$ 362,369,093	\$ 389,103,033
Funded Ratio	62.17%	60.57%	58.86%
Contribution Rate	21.08%	22.36%	23.97%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%
Insurance			
Actuarial Accrued Liability	\$ 374,904,234	\$ 376,207,536	\$ 377,592,353
Actuarial Value of Assets	<u>451,514,191</u>	<u>451,514,191</u>	<u>451,514,191</u>
Unfunded Liability	\$ (76,609,957)	\$ (75,306,655)	\$ (73,921,838)
Funded Ratio	120.43%	120.02%	119.58%
Contribution Rate	2.74%	2.92%	3.12%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%
KERS Hazardous Total			
Actuarial Accrued Liability	\$ 1,270,337,621	\$ 1,295,264,386	\$ 1,323,383,143
Actuarial Value of Assets	<u>1,008,201,948</u>	<u>1,008,201,948</u>	<u>1,008,201,948</u>
Unfunded Liability	\$ 262,135,673	\$ 287,062,438	\$ 315,181,195
Funded Ratio	79.36%	77.84%	76.18%
Contribution Rate	23.82%	25.28%	27.09%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%



**HAZARDOUS
PAYROLL GROWTH ASSUMPTION SENSITIVITY ANALYSIS**

	Valuation Results	Decrease Payroll Growth 2%	No Payroll Growth
Retirement			
Actuarial Accrued Liability	\$ 895,433,387	\$ 895,433,387	\$ 895,433,387
Actuarial Value of Assets	<u>556,687,757</u>	<u>556,687,757</u>	<u>556,687,757</u>
Unfunded Liability	\$ 338,745,630	\$ 338,745,630	\$ 338,745,630
Funded Ratio	62.17%	62.17%	62.17%
Contribution Rate	21.08%	24.72%	28.89%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%
Insurance			
Actuarial Accrued Liability	\$ 374,904,234	\$ 374,904,234	\$ 374,904,234
Actuarial Value of Assets	<u>451,514,191</u>	<u>451,514,191</u>	<u>451,514,191</u>
Unfunded Liability	\$ (76,609,957)	\$ (76,609,957)	\$ (76,609,957)
Funded Ratio	120.43%	120.43%	120.43%
Contribution Rate	2.74%	2.00%	1.16%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%
KERS Hazardous Total			
Actuarial Accrued Liability	\$ 1,270,337,621	\$ 1,270,337,621	\$ 1,270,337,621
Actuarial Value of Assets	<u>1,008,201,948</u>	<u>1,008,201,948</u>	<u>1,008,201,948</u>
Unfunded Liability	\$ 262,135,673	\$ 262,135,673	\$ 262,135,673
Funded Ratio	79.36%	79.36%	79.36%
Contribution Rate	23.82%	26.72%	30.05%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%



Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve



www.CavMacConsulting.com



Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

November 10, 2015

Board of Trustees
Kentucky Retirement Systems
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Dear Members of the Board:

Presented in this report are the results for the annual actuarial valuation of the retirement and insurance benefits provided under the County Employees Retirement System (CERS). The purpose of the valuation was to measure the System's funding progress and to determine the required employer contribution rates for the fiscal year beginning July 1, 2016. The date of the valuation was June 30, 2015.

The valuation was based upon data, furnished by the Executive Director and the Kentucky Retirement Systems (KRS) staff, concerning active, inactive and retired members along with pertinent financial information. The complete cooperation of the KRS staff in furnishing materials requested is hereby acknowledged with appreciation.

Since the previous valuation, the revised assumptions from the economic and demographic experience investigation covering the five-year period from July 1, 2008 to June 30, 2013 have been reflected in this valuation.

To the best of our knowledge, this report is complete and accurate. The valuation was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The valuation was prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144

Phone (678) 388-1700 • Fax (678) 388-1730

www.CavMacConsulting.com

Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE



The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the system, and on actuarial assumptions that are, in the aggregate, internally consistent and reasonably based on the actual experience of the system.

Respectfully submitted,

A handwritten signature in blue ink that reads 'Todd B. Green' followed by a long horizontal flourish.

Todd B. Green ASA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink that reads 'Alisa Bennett'.

Alisa Bennett, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

TBG/AB:kc



TABLE OF CONTENTS

<u>Section</u>	<u>Item</u>	<u>Page No.</u>
I	Summary of Principal Results	1
II	Membership Data	3
III	Assets	5
IV	Comments on Valuation	6
V	Derivation of Experience Gains and Losses	8
VI	Actuarially Determined Contribution Rates	13
VII	Accounting Information	16
<u>Schedule</u>		
A	Valuation Balance Sheet and Solvency Test	22
B	Development of Actuarial Value of Assets	30
C	Statement of Actuarial Assumptions and Methods	34
D	Summary of Main Benefit and Contribution Provisions	41
E	Detailed Tabulations of the Data	53
F	Sensitivity Analysis	62



**REPORT ON THE ANNUAL VALUATION OF THE
COUNTY EMPLOYEES RETIREMENT SYSTEM**

PREPARED AS OF JUNE 30, 2015

SECTION I – SUMMARY OF PRINCIPAL RESULTS

This report, prepared as of June 30, 2015, presents the results of the annual actuarial valuation of the retirement and insurance benefits provided under the System. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results, broken down between non-hazardous and hazardous members, are summarized in the following table.

SUMMARY OF PRINCIPAL RESULTS

	CERS Non-Hazardous		CERS Hazardous		CERS Totals	
	6/30/2015	6/30/2014	6/30/2015	6/30/2014	6/30/2015	6/30/2014
Contributions for next fiscal year:						
Retirement	13.95%	12.42%	21.71%	20.26%		
Insurance	<u>4.93</u>	<u>4.88</u>	<u>9.79</u>	<u>13.42</u>	N/A	N/A
Total	18.88%	17.30%	31.50%	33.68%		
Funded status as of valuation date:						
Retirement						
Actuarial accrued liability	\$10,740,325,421	\$9,772,522,616	\$3,613,307,547	\$3,288,825,753	\$14,353,632,968	\$13,061,348,369
Actuarial value of assets	\$6,474,848,513	\$6,117,133,692	\$2,096,782,956	\$1,967,640,027	\$8,571,631,469	\$8,084,773,719
Unfunded liability on actuarial value of assets	\$4,265,476,908	\$3,655,388,924	\$1,516,524,591	\$1,321,185,726	\$5,782,001,499	\$4,976,574,650
Funded ratio on actuarial value of assets	60.29%	62.60%	58.03%	59.83%	59.72%	61.90%
Market value of assets	\$6,416,853,506	\$6,507,300,157	\$2,073,397,045	\$2,082,998,414	\$8,490,250,551	\$8,590,298,571
Unfunded liability on market value of assets	\$4,323,471,915	\$3,265,222,459	\$1,539,910,502	\$1,205,827,339	\$5,863,382,417	\$4,471,049,798
Funded ratio on market value of assets	59.75%	66.59%	57.38%	63.34%	59.15%	65.77%
Insurance						
Actuarial accrued liability	\$2,907,827,440	\$2,616,914,600	\$1,504,015,233	\$1,493,864,379	\$4,411,842,673	\$4,110,778,979
Actuarial value of assets	\$1,997,456,463	\$1,831,199,465	\$1,087,707,118	\$997,733,237	\$3,085,163,581	\$2,828,932,702
Unfunded liability on actuarial value of assets	\$910,370,977	\$785,715,135	\$416,308,115	\$496,131,142	\$1,326,679,092	\$1,281,846,277
Funded ratio on actuarial value of assets	68.69%	69.98%	72.32%	66.79%	69.93%	68.82%
Market value of assets	\$1,948,454,097	\$1,899,557,376	\$1,061,560,788	\$1,034,307,636	\$3,010,014,885	\$2,933,865,012
Unfunded liability on market value of assets	\$959,373,343	\$717,357,224	\$442,454,445	\$459,556,743	\$1,401,827,788	\$1,176,913,967
Funded ratio on market value of assets	67.01%	72.59%	70.58%	69.24%	68.23%	71.37%
Demographic data as of valuation date:						
Number of retired participants and beneficiaries	52,651	49,935	8,034	7,646	60,685	57,581
Number of vested former members	13,649	10,329	708	588	14,357	10,917
Number of former members due a refund	66,530	66,661	1,948	1,940	68,478	68,601
Number of active members	80,852	81,115	9,172	9,194	90,024	90,309
Total salary	\$2,296,715,957	\$2,272,270,287	\$483,640,601	\$479,164,016	\$2,780,356,558	\$2,751,434,303
Average salary	\$28,406	\$28,013	\$52,730	\$52,117	\$30,885	\$30,467



The County Employees Retirement System is a defined benefit pension fund that provides pensions and health care coverage for employees of city and county governments, police officers and firefighters, non-teaching staff of local boards of education, circuit clerks, local library employees, and other local governmental agency employees. The County Employees Retirement System includes both non-hazardous and hazardous duty benefits. This report presents the results of the June 30, 2015 actuarial funding valuation for both the Retirement Plan and the Insurance Fund. The primary purpose of performing the actuarial funding valuations are to:

- Calculate the actuarially determined contribution rates for the fiscal year beginning July 1, 2016 for both the Retirement Plan and the Insurance Fund.
- Determine the experience of the System since the last valuation date.
- Disclose asset and liability measures as of the valuation date.
- Analyze and report on trends in contributions, assets, and liabilities over the past several years.

Since the previous valuation there were no changes to the plan provisions, however the actuarial methods and assumptions were updated to reflect an experience study performed over the five-year period ending June 30, 2013 dated April 30, 2014. This experience study was adopted by the Board on December 4, 2014. The experience study reviewed the actuarial assumptions and methods used in the actuarial valuation process of both the Retirement Plan and Insurance Fund. For the Retirement Plan the assumptions fall into three categories. The first are economic assumptions which include price inflation, wage inflation and investment return. The second category includes demographic assumptions which includes assumed rates of mortality, service retirement, disability retirement, withdrawal and salary increases for merits and promotions. For the Insurance Fund the assumptions fall into three categories. The first two, economic assumptions and demographic assumptions are the same as those used for the Retirement Plan. The third category includes other post-employment benefit assumptions.

As a result of the experience the following assumptions were updated:

Summary of Assumptions Changes	
Economic Assumptions	
Salary	Composed of Inflation component, Real Rate of Salary Increase component and Merit/Promotion Scale
Inflation	Reduction to annual assumed rate of inflation assumption from 3.50% to 3.25%.
Wage Inflation	Reduction to annual assumed rate from real salary increase assumption from 1.00% to 0.75%
Investment Rate of Return	Composed of Inflation component (3.25% from above) and Real Rate of Return component. Reduction from 7.75% to 7.50% net investment return assumption.
Payroll Growth	Reduce from 4.50% to 4.00%.



Summary of Assumptions Changes	
Demographic Assumptions	
Withdrawal	Increase rates of withdrawal
Retirement	Adjusted rates of retirement
Disability	Decreased rates of disability
Base Mortality	Healthy Retirees – RP-2000 Mortality Tables Set back one year for females. Disabled Retirees – RP-2000 Combined Disabled Mortality Tables for disabled annuitants set back four years for males. Actives – 50% of the RP-2000 Combined Mortality for males, 30% of the RP-2000 Combined Mortality for Females.
Mortality Projection	Healthy Retiree and Beneficiary – Mortality rates are projected to 2013 using improvement Scale BB Disable Retirees – Mortality rates are projected to 2013 using improvement Scale BB Active Members – Mortality rates are projected to 2013 using improvement Scale BB
Other Post-Employment Benefit Assumptions	Updated participation assumptions

The actuarial valuation results provide “snapshot” view the System’s financial condition on June 30, 2015. Actuarial gains and losses result when actuarial experience of the plan (such as asset return, pay increases, turnover, deaths, etc.) is different from the expected by the actuarial assumptions.

Non-Hazardous

The Retirement Plan’s Unfunded Actuarial Accrued Liability (UAAL) was expected to be \$3,682.6 million taking into account contributions from both the employer and members of \$446.2 million. The actual UAAL was \$4,265.5 million. The increase of \$582.9 million was due to the change in actuarial assumptions and methods offset by an actuarial gain due to actual experience different than what was anticipated by the assumptions. The Insurance Fund’s UAAL was expected to be \$803.2 million taking into account expected employer and member contributions of \$116.6 million. The actual UAAL was \$910.4 million. The increase in the UAAL of \$107.2 million was due to the change in actuarial assumptions and methods offset by an actuarial gain due to actuarial experience different than what was anticipated by the assumptions.

The remaining amortization period of the UAAL of both the Pension and Insurance Funds is 28-years as of June 30, 2015. Detailed analysis of the gains and losses are presented in Section V of the report.

As of June 30, 2015 the Pension and Insurance Funds had net assets of \$6,416,853,506 and \$1,948,454,097 respectively. The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the actuarially determined contribution. The asset valuation method which recognizes the annual



unexpected portion of market value investment returns over a five-year period, attempts to dampen the effect of market volatility. The resulting amount is called the “actuarial value of assets” and is utilized to determine the actuarial valuation results. In this year’s actuarial valuation, the actuarial value of assets as of June 30, 2015 was \$6,474,848,513 and \$1,997,456,463 respectively for the Pension and Insurance Funds.

On a market basis, the estimated rate of return was 1.72% and 1.93% respectively for the Pension and Insurance Funds, assuming all cash flows occur in the middle of the year. Due to better than assumed prior returns on the market value of assets the net rate of return measured on the actuarial value of assets was 9.28% and 8.39% respectively for both the Pension and Insurance Funds. Please see Section III and Schedule B of this report for more detailed information on the market and actuarial value of assets.

Hazardous

The Retirement Plan’s Unfunded Actuarial Accrued Liability (UAAL) was expected to be \$1,331.6 million taking into account contributions from both the employer and members of \$157.9 million. The actual UAAL was \$1,516.5 million. The increase of \$184.9 million was due to the change in actuarial assumptions and methods and an actuarial loss due to actual experience different than what was anticipated by the assumptions. The Insurance Fund’s UAAL was expected to be \$507.2 million taking into account expected employer and member contributions of \$65.0 million. The actual UAAL was \$416.3 million. The decrease in the UAAL of \$90.9 million was due to the change in actuarial assumptions and methods and an actuarial gain due to actuarial experience different than what was anticipated by the assumptions.

The remaining amortization period of the UAAL of both the Pension and Insurance Funds is 28-years as of June 30, 2015. Detailed analysis of the gains and losses are presented in Section V of the report.

As of June 30, 2015 the Pension and Insurance Funds had net assets of \$2,073,397,045 and \$1,061,560,788 respectively. The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the actuarially determined contribution. The asset valuation method which recognizes the annual unexpected portion of market value investment returns over a five-year period, attempts to dampen the effect of market volatility. The resulting amount is called the “actuarial value of assets” and is utilized to determine the actuarial valuation results. In this year’s actuarial valuation, the actuarial value of assets as of June 30, 2015 was \$2,096,782,956 and \$1,087,707,118 respectively for the Pension and Insurance Funds.

On a market basis, the estimated rate of return was 1.80% and 1.95% respectively for the Pension and Insurance Funds, assuming all cash flows occur in the middle of the year. Due to better than assumed prior returns on the market value of assets the net rate of return measured on the actuarial value of assets was 9.04% and 8.29% respectively for both the Pension and Insurance Funds. Please see Section III and Schedule B of this report for more detailed information on the market and actuarial value of assets.



Schedule F provides sensitivity analysis for three different sets of economic assumptions; the discount rate assumption, the inflation assumption, and the payroll growth assumption. Two assumption change scenarios are presented for each economic assumption. The results of the economic assumption change scenarios are presented along with the valuation results for comparison.

The long-term financial health of this retirement System, like all retirement systems, is heavily dependent on two key items: (1) future investment returns and (2) contributions to the System. The System has recently been strengthened by eliminating unfunded ad hoc cost-of-living adjustments for retirees. The cost for providing these benefit increase must be prefunded in advance.



SECTION II – MEMBERSHIP DATA

Data regarding the membership of the System for use as a basis for the valuation were furnished by the System’s office. The following table summarizes the membership of the system as of June 30, 2015 upon which the valuation was based. Detailed tabulations of the data are given in Schedule E.

Active Members

Employee Group	Number	Payroll	Group Averages		
			Salary	Age	Service
Non-Hazardous	80,852	\$2,296,715,957	\$28,406	48.0	9.5
Hazardous	9,172	483,640,601	52,730	39.1	10.6
Total in CERS	90,024	\$2,780,356,558	\$30,885	47.1	9.6

The following tables show a six-year history of active member valuation data.

SCHEDULE OF NON-HAZARDOUS CERS ACTIVE MEMBER VALUATION DATA

Valuation Date	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
6/30/2010	84,681	\$2,236,855,380	\$26,415	1.3%
6/30/2011	85,285	2,276,595,948	26,694	1.1
6/30/2012	83,052	2,236,546,345	26,929	0.9
6/30/2013	81,815	2,236,277,489	27,333	1.5
6/30/2014	81,115	2,272,270,287	28,013	2.5
6/30/2015	80,852	2,296,715,957	28,406	1.4

SCHEDULE OF HAZARDOUS CERS ACTIVE MEMBER VALUATION DATA

Valuation Date	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
6/30/2010	9,562	\$466,548,660	\$48,792	1.4%
6/30/2011	9,407	466,963,860	49,640	1.7
6/30/2012	9,130	464,228,923	50,847	2.4
6/30/2013	9,123	461,672,567	50,605	(0.5)
6/30/2014	9,194	479,164,016	52,117	3.0
6/30/2015	9,172	483,640,601	52,730	1.2



The following tables show the number and annual retirement allowances payable to retired members and their beneficiaries on the roll of the Retirement System as of the valuation date as well as certain group averages.

Non-Hazardous Retired Lives

Type of Benefit Payment	Number*	Annual Benefits*	Group Averages	
			Benefit	Age
Retiree	44,185	\$513,032,750	\$11,611	69.7
Disability	3,740	40,943,159	10,947	64.4
Beneficiary	4,726	41,299,467	8,739	67.1
Total in CERS	52,651	\$595,275,376	\$11,306	69.1

* Does not include number and annual benefits for those members included in the hazardous system who are also receiving benefits from the non-hazardous system. There were 2,819 members in the hazardous system also receiving an annual benefit from the non-hazardous System. Total annual benefits for these members is \$19,419,161.

Hazardous Retired Lives

Type of Benefit Payment	Number	Annual Benefits	Group Averages	
			Benefit	Age
Retiree	6,632	\$180,783,035	\$27,259	61.2
Disability	494	8,049,322	16,294	55.6
Beneficiary	908	13,320,981	14,671	56.5
Total in CERS	8,034	\$202,153,338	\$25,162	60.4

This valuation also includes 82,835 inactive members (80,179 Non-Hazardous and 2,656 Hazardous; of which 13,649 Non-Hazardous are vested and 708 Hazardous are vested).



SECTION III – ASSETS

1. As of June 30, 2015 the total market value of assets amounted to \$11,500,265,436 as shown in the following table. The Insurance assets include both the amount in the health care trust and the amount in the 401(h) account in the pension trust established to meet the requirements of HB1.

**MARKET VALUE OF ASSETS BY FUND
AS OF JUNE 30, 2015**

Member Group	Retirement	Insurance	CERS Total
Non-Hazardous	\$6,416,853,506	\$1,948,454,097	\$8,365,307,603
Hazardous	<u>2,073,397,045</u>	<u>1,061,560,788</u>	<u>3,134,957,833</u>
Total	\$8,490,250,551	\$3,010,014,885	\$11,500,265,436

2. The five-year smoothed market related actuarial value of assets used for the current valuation was \$11,656,795,050. Schedule B shows the development of the actuarial value of assets as of June 30, 2015. The following table shows the actuarial value of assets allocated among member groups.

COMPARISON OF ACTUARIAL VALUE OF ASSETS

	JUNE 30, 2015	JUNE 30, 2014
Retirement		
Non-Hazardous	\$ 6,474,848,513	\$ 6,117,133,692
Hazardous	<u>2,096,782,956</u>	<u>1,967,640,027</u>
Total	\$ 8,571,631,469	\$ 8,084,773,719
Insurance		
Non-Hazardous	\$ 1,997,456,463	\$ 1,831,199,465
Hazardous	<u>1,087,707,118</u>	<u>997,733,237</u>
Total	\$ 3,085,163,581	\$ 2,828,932,702
CERS Total		
Non-Hazardous	\$ 8,472,304,976	\$ 7,948,333,157
Hazardous	<u>3,184,490,074</u>	<u>2,965,373,264</u>
Total	\$ 11,656,795,050	\$ 10,913,706,421



SECTION IV - COMMENTS ON VALUATION

Schedule A of this report contains the valuation balance sheets which show the present and prospective assets and liabilities of the System as of June 30, 2015. Separate balance sheets are shown for each employee group as well as in total for all groups. Since the previous valuation, the revised assumptions from the economic and demographic experience investigation covering the five-year period from July 1, 2008 to June 30, 2013 have been reflected in this valuation.

Retirement

1. The total valuation balance sheet on account of retirement benefits shows that the System has total prospective retirement benefit liabilities of \$16,266,003,952, of which \$8,396,260,203 is for the prospective benefits payable on account of present retired members and beneficiaries of deceased members, \$391,305,698 is for the prospective benefits payable on account of inactive members and \$7,478,438,051 is for the prospective benefits payable on account of present active members. Against these retirement benefit liabilities the System has a total present actuarial value of assets of \$8,571,631,469 as of June 30, 2015. The difference of \$7,694,372,483 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of retirement benefits. Of this amount, \$1,253,220,746 is the present value of future contributions expected to be made by members, and the balance of \$6,441,151,737 represents the present value of future contributions payable by the employers.
2. The employers' contributions to the System on account of retirement benefits consist of normal contributions, accrued liability contributions and contributions for administrative expenses. The valuation indicates that employer normal contributions at the rate of 3.05% of payroll for non-hazardous members and 4.26% of payroll for hazardous members are required to fund the continuing benefit accruals for the average active member of CERS.
3. Prospective employer normal contributions on account of retirement benefits at the above rates have a present value of \$659,150,238. When this amount is subtracted from \$6,441,151,737, which is the present value of the total future contributions to be made by the employers, there remains \$5,782,001,499 as the amount of future accrued liability contributions.
4. For non-hazardous members, it is recommended that the accrued liability contribution rate payable by the Counties on account of retirement benefits be set at 10.15% of payroll. For hazardous members, it is recommended that the accrued liability contribution rate payable by the participating employers on account of retirement benefits be set at 17.19% of payroll. These rates are sufficient to liquidate the unfunded accrued liability of \$4,265,476,908 for non-hazardous members and \$1,516,524,591 for hazardous members over 28 years on the assumption that the aggregate payroll for non-hazardous and hazardous members will increase by 4.00% each year.



5. For non-hazardous members, the contribution rate for administrative expenses is determined to be 0.75% of payroll. For hazardous members, the contribution rate for administrative expenses is determined to be 0.26% of payroll.

Insurance

1. The total valuation balance sheet on account of insurance benefits shows that the System has total prospective insurance benefit liabilities of \$5,115,755,686, of which \$1,986,476,405 is for the prospective benefits payable on account of present retired members and beneficiaries of deceased members, \$176,833,997 is for the prospective benefits payable on account of inactive members and \$2,952,445,284 is for the prospective benefits payable on account of present active members. Against these insurance benefit liabilities the System has a total present actuarial value of assets of \$3,085,163,581 as of June 30, 2015. The difference of \$2,030,592,105 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of insurance benefits. Of this amount, \$84,680,334 is the present value of future contributions expected to be made by members, and the balance of \$1,945,911,771 represents the present value of future contributions payable by the employers.
2. The employers' contributions to the System on account of insurance benefits consist of normal contributions and accrued liability contributions. The valuation indicates that employer normal contributions at the rate of 2.76% of payroll for non-hazardous members and 5.08% of payroll for hazardous members are required to fund the continuing benefit accruals for the average active member of CERS.
3. Prospective employer normal contributions on account of insurance benefits at the above rates have a present value of \$619,232,679. When this amount is subtracted from \$1,945,911,771, which is the present value of the total future contributions to be made by the employers, there remains \$1,326,679,092 as the amount of future accrued liability contributions.
4. For non-hazardous members, it is recommended that the accrued liability contribution rate payable by the Counties on account of insurance benefits be set at 2.14% of payroll. For hazardous members, it is recommended that the accrued liability contribution rate payable by the participating employers on account of insurance benefits be set at 4.64% of payroll. These rates are sufficient to liquidate the unfunded accrued liability of \$910,370,977 for non-hazardous members and \$416,308,115 for hazardous members over 28 years on the assumption that the aggregate payroll for non-hazardous and hazardous members will increase by 4.00% each year.
5. The contribution rate for administrative expenses is determined to be 0.03% of payroll for non-hazardous employees and 0.07% of payroll for hazardous employees.



SECTION V – DERIVATION OF EXPERIENCE GAINS AND LOSSES

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain (loss) for the year ended June 30, 2015 is shown below (\$ millions).

**Experience Gain/(Loss)
Retirement Benefits**

		Non-Hazardous Group	Hazardous Group	Total
(1)	UAAL* as of 6/30/14	\$ 3,655.4	\$ 1,321.2	\$ 4,976.6
(2)	Normal cost from last valuation	192.5	66.8	259.3
(3)	Contributions	446.2	157.9	604.1
(4)	Interest accrual: [(1) + (2)] x .0775 - (3) x .03875	280.9	101.5	382.4
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$ 3,682.6	\$ 1,331.6	\$ 5,014.2
(6)	Change due to audit recommendations	(8.0)	1.3	(6.7)
(7)	Change due to new actuarial assumption or methods	(598.3)	(168.1)	(766.4)
(8)	Expected UAAL after changes: (5) - (6) - (7)	\$ 4,288.9	\$ 1,498.4	\$ 5,787.3
(9)	Actual UAAL as of 6/30/15	\$ 4,265.5	\$ 1,516.5	\$ 5,782.0
(10)	Gain/(loss): (8) - (9)	\$ 23.4	\$ (18.1)	\$ 5.3
(11)	Accrued liabilities as of 6/30/14	\$ 9,772.5	\$ 3,288.8	\$ 13,061.3
(12)	Gain/(loss) as percent of actuarial accrued liabilities at start of year	0.2 %	(0.6)%	0.0 %

*Unfunded actuarial accrued liability



**Experience Gain/(Loss)
Insurance Benefits**

		Non-Hazardous Group	Hazardous Group	Total
(1)	UAAL * as of 6/30/14	\$ 785.7	\$ 496.1	\$ 1,281.8
(2)	Normal cost from last valuation	76.3	39.6	115.9
(3)	Expected contributions	<u>116.6</u>	<u>65.0</u>	<u>181.6</u>
(4)	Interest accrual: [(1) + (2) - (3)] x .0775	57.8	36.5	94.3
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$ 803.2	\$ 507.2	\$ 1,310.4
(6)	Change due to audit recommendations	(6.8)	(0.9)	(7.7)
(7)	Change due to new actuarial assumption or methods	(180.5)	23.5	(157.0)
(8)	Expected UAAL after changes: (5) - (6) - (7)	\$ 990.5	\$ 484.6	\$ 1,475.1
(9)	Actual UAAL as of 6/30/15	\$ 910.4	\$ 416.3	\$ 1,326.7
(10)	Gain/(loss): (8) - (9)	\$ 80.1	\$ 68.3	\$ 148.4
(11)	Accrued liabilities as of 6/30/14	\$ 2,616.9	\$ 1,493.9	\$ 4,110.8
(12)	Gain/(loss) as percent of actuarial accrued liabilities at start of year	3.1 %	4.6 %	3.6 %

* *Unfunded actuarial accrued liability*



**NON-HAZARDOUS CERS MEMBERS
ANALYSIS OF FINANCIAL EXPERIENCE**

**Gains & Losses in Accrued Liabilities
Resulting from Difference Between
Assumed Experience & Actual Experience
(\$ Millions)**

Type of Activity	Retirement \$ Gain (or Loss) For Year Ending 6/30/15	Insurance \$ Gain (or Loss) For Year Ending 6/30/15
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (86.6)	\$ (20.6)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(17.1)	2.6
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(1.1)	(2.5)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	43.5	(15.3)
Pay or Claims Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss. For insurance, smaller claims increases than assumed creates a gain; larger, a loss.	46.5	133.8
New Members. Additional unfunded accrued liability will produce a loss.	(16.9)	(5.7)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	103.0	11.7
Death or Waiver After Retirement. If retired members live longer than assumed, there is a loss. If not as long, a gain. If retired members receiving health benefits later waive coverage, there is a gain.	(6.2)	26.1
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, insurance election changes, etc.	<u>(41.8)</u>	<u>(50.0)</u>
Gain (or Loss) During Year From Financial Experience	\$ 23.4	\$ 80.1
Non-Recurring Items. Adjustments for plan amendments, assumption changes, method changes and data corrections	<u>(606.3)</u>	<u>(187.3)</u>
Composite Gain (or Loss) During Year	\$ (582.9)	\$ (107.2)



**HAZARDOUS CERS MEMBERS
ANALYSIS OF FINANCIAL EXPERIENCE**

**Gains & Losses in Accrued Liabilities
Resulting from Difference Between
Assumed Experience & Actual Experience
(\$ Millions)**

Type of Activity	Retirement \$ Gain (or Loss) For Year Ending 6/30/15	Insurance \$ Gain (or Loss) For Year Ending 6/30/15
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (70.9)	\$ (8.9)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(2.7)	0.6
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	0.1	(0.7)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	32.1	3.2
Pay or Claims Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss. For insurance, smaller claims increases than assumed creates a gain; larger, a loss.	12.8	72.3
New Members. Additional unfunded accrued liability will produce a loss.	(23.8)	(4.9)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	28.1	5.4
Death or Waiver After Retirement. If retired members live longer than assumed, there is a loss. If not as long, a gain. If retired members receiving health benefits later waive coverage, there is a gain.	28.9	11.5
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, insurance election changes, etc.	<u>(22.7)</u>	<u>(10.2)</u>
Gain (or Loss) During Year From Financial Experience	\$ (18.1)	\$ 68.3
Non-Recurring Items. Adjustments for plan amendments, assumption changes, method changes and data corrections	<u>(166.8)</u>	<u>22.6</u>
Composite Gain (or Loss) During Year	\$ (184.9)	\$ 90.9



**TOTAL CERS MEMBERS
ANALYSIS OF FINANCIAL EXPERIENCE**

**Gains & Losses in Accrued Liabilities
Resulting from Difference Between
Assumed Experience & Actual Experience
(\$ Millions)**

Type of Activity	Retirement \$ Gain (or Loss) For Year Ending 6/30/15	Insurance \$ Gain (or Loss) For Year Ending 6/30/15
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (157.5)	\$ (29.5)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(19.9)	3.2
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(0.9)	(3.2)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	75.6	(12.1)
Pay or Claims Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss. For insurance, smaller claims increases than assumed creates a gain; larger, a loss.	59.3	206.1
New Members. Additional unfunded accrued liability will produce a loss.	(40.7)	(10.6)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	131.1	17.1
Death or Waiver After Retirement. If retired members live longer than assumed, there is a loss. If not as long, a gain. If retired members receiving health benefits later waive coverage, there is a gain.	22.7	37.6
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, insurance election changes, etc.	<u>(64.5)</u>	<u>(60.2)</u>
Gain (or Loss) During Year From Financial Experience	\$ 5.2	\$ 148.4
Non-Recurring Items. Adjustments for plan amendments, assumption changes, method changes and data corrections	<u>(773.1)</u>	<u>(164.7)</u>
Composite Gain (or Loss) During Year	\$ (767.9)	\$ (16.3)



SECTION VI – ACTUARIALLY DETERMINED CONTRIBUTION RATES

The valuation balance sheet gives the basis for determining the percentage rates for contributions to be made by employers to the Retirement System. The following tables show the rates of contribution payable by employers as determined from the present valuation for the 2016/2017 fiscal year.

**Actuarially Determined Contribution Rates
Non-Hazardous Retirement**

Contribution Rate for	% of Payroll
A. Normal Cost:	
(1) Service retirement benefits	7.68%
(2) Disability benefits	0.28
(3) Survivor benefits	0.09
(4) Total	<u>8.05%</u>
B. Member Contributions	5.00%
C. Employer Normal Cost: [A(4) - B]	3.05%
D. Administrative Expenses	0.75%
E. Unfunded Actuarial Accrued Liability Contributions:	
(1) UAAL Contribution Based on 6/30/14 Valuation:	8.19%
(2) Change due to:	
a. Active decrements	0.30%
b. Pay increases	(0.11)%
c. Retiree mortality	0.01%
d. Investment return	(0.25)%
e. Assumption Changes	1.42%
f. Payroll Growth Assumption	0.33%
g. Other	0.26%
h. Total Change	<u>1.96%</u>
(3) UAAL Contribution Based on 6/30/15 Valuation: [E(1) +E(2)h]	10.15%
F. Total Recommended Employer Contribution Rate: [C+D+E(3)]	13.95%

**Based on 28 year amortization of the UAAL from June 30, 2015*



**Actuarially Determined Contribution Rates
Hazardous Retirement**

Contribution Rate for	% of Payroll
A. Normal Cost:	
(1) Service retirement benefits	11.71%
(2) Disability benefits	0.44
(3) Survivor benefits	0.11
(4) Total	<u>12.26%</u>
B. Member Contributions	8.00%
C. Employer Normal Cost: [A(4) - B]	4.26%
D. Administrative Expenses	0.26%
E. Unfunded Actuarial Accrued Liability Contributions*:	
(1) UAAL Contribution Based on 6/30/14 Valuation:	14.05%
(2) Change due to:	
a. Active decrements	0.47%
b. Pay increases	(0.15)%
c. Retiree mortality	(0.33)%
d. Investment return	(0.32)%
e. Assumption Changes	2.23%
f. Payroll Growth Assumption	0.77%
g. Other	0.47%
h. Total Change	<u>3.14%</u>
(3) UAAL Contribution Based on 6/30/15 Valuation: [E(1) +E(2)h]	17.19%
F. Total Recommended Employer Contribution Rate: [C+D+E(3)]	21.71%

**Based on 28 year amortization of the UAAL from June 30, 2015*



**Actuarially Determined Contribution Rates
Non-Hazardous Insurance**

Contribution for	% of Payroll
A. Normal Cost:	3.10%
B. Member Contributions*	0.34%
C. Employer Normal Cost: [A - B]	2.76%
D. Administrative Expenses	0.03%
E. Unfunded Actuarial Accrued Liability**:	2.14%
F. Total Recommended Employer Contribution Rate: [C+D+E]	4.93%

**The liabilities are net of retiree contributions toward their healthcare.*

*** Based on 28 year amortization of the UAAL from June 30, 2015*

**Actuarially Determined Contribution Rates
Hazardous Insurance**

Contribution for	% of Payroll
A. Normal Cost:	5.36%
B. Member Contributions*	0.28%
C. Employer Normal Cost: [A - B]	5.08%
D. Administrative Expenses	0.07%
E. Unfunded Actuarial Accrued Liability**:	4.64%
F. Total Recommended Employer Contribution Rate: [C+D+E]	9.79%

**The liabilities are net of retiree contributions toward their healthcare.*

*** Based on 28 year amortization of the UAAL from June 30, 2015*



SECTION VII - ACCOUNTING INFORMATION

Governmental Accounting Standards Board Statements (GASB) 43, 45, 67 and 68 set forth certain items of required supplementary information to be disclosed in the financial statements of the System and the employer. The information required under GASB 67 and 68 will be issued in separate reports. We are providing the retirement benefit information for information purposes only. One such item is a distribution of the number of employees by type of membership, as follows:

**NUMBER OF ACTIVE AND RETIRED MEMBERS
AS OF JUNE 30, 2015**

GROUP	NUMBER		
	Non-Hazardous	Hazardous	Total
Retirees and beneficiaries currently receiving benefits	52,651	8,034	60,685
Terminated employees entitled to benefits but not yet receiving benefits	80,179	2,656	82,835
Active Members	<u>80,852</u>	<u>9,172</u>	<u>90,024</u>
Total	213,682	19,862	233,544

** Does not include number and annual benefits for those members included in the hazardous system who are also receiving benefits from the non-hazardous system. There were 2,819 members in in the hazardous system also receiving an annual benefit from the non-hazardous system.*

Another such item is the Schedule of Funding Progress for retirement and insurance benefits separately as shown in the following tables.



**RETIREMENT BENEFITS
SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / (c))
Non-Hazardous Members						
6/30/2010	\$ 5,546,857,291	\$ 8,459,022,280	\$ 2,912,164,989	65.6%	\$ 2,236,855,380	130.2%
6/30/2011	5,629,611,183	8,918,085,025	3,288,473,842	63.1	2,276,595,948	144.4
6/30/2012	5,547,235,599	9,139,567,695	3,592,332,096	60.7	2,236,546,345	160.6
6/30/2013	5,637,094,483	9,378,876,114	3,741,781,631	60.1	2,236,277,489	167.3
6/30/2014	6,117,133,692	9,772,522,616	3,655,388,924	62.6	2,272,270,287	160.9
6/30/2015*	6,474,848,513	10,740,325,421	4,265,476,908	60.3	2,296,715,957	185.7
Hazardous Members						
6/30/2010	\$ 1,749,464,388	\$ 2,672,151,907	\$ 922,687,519	65.5%	\$ 466,548,660	197.8%
6/30/2011	1,779,545,393	2,859,041,052	1,079,495,659	62.2	466,963,860	231.2
6/30/2012	1,747,379,297	3,009,992,047	1,262,612,750	58.1	464,228,923	272.0
6/30/2013	1,801,691,410	3,124,205,593	1,322,514,183	57.7	461,672,567	286.5
6/30/2014	1,967,640,027	3,288,825,753	1,321,185,726	59.8	479,164,016	275.7
6/30/2015*	2,096,782,956	3,613,307,547	1,516,524,591	58.0	483,640,601	313.6
Total CERS Members						
6/30/2010	\$ 7,296,321,679	\$ 11,131,174,187	\$ 3,834,852,508	65.5%	\$ 2,703,404,040	141.9%
6/30/2011	7,409,156,576	11,777,126,077	4,367,969,501	62.9	2,743,559,808	159.2
6/30/2012	7,294,614,896	12,149,559,743	4,854,944,847	60.0	2,700,775,268	179.8
6/30/2013	7,438,785,893	12,503,081,707	5,064,295,814	59.5	2,697,950,056	187.7
6/30/2014	8,084,773,719	13,061,348,369	4,976,574,650	61.9	2,751,434,303	180.9
6/30/2015	8,571,631,469	14,353,632,968	5,782,001,499	59.7	2,780,356,558	208.0

* Discount rate changed from 7.75% to 7.50%



**INSURANCE BENEFITS
SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / (c))
Non-Hazardous Members						
6/30/2010	\$ 1,293,038,593	\$ 3,158,340,174	\$ 1,865,301,581	40.9%	\$ 2,236,855,380	83.4%
6/30/2011	1,433,450,793	3,073,973,205	1,640,522,412	46.6	2,276,595,948	72.1
6/30/2012	1,512,853,851	2,370,771,288	857,917,437	63.8	2,236,546,345	38.4
6/30/2013	1,628,244,197	2,443,894,100	815,649,903	66.6	2,236,277,489	36.5
6/30/2014	1,831,199,465	2,616,914,600	785,715,135	70.0	2,272,270,287	34.6
6/30/2015*	1,997,456,463	2,907,827,440	910,370,977	68.7	2,296,715,957	39.6
Hazardous Members						
6/30/2010	\$ 692,769,770	\$ 1,674,703,216	\$ 981,933,446	41.4%	\$ 466,548,660	210.5%
6/30/2011	770,790,274	1,647,702,755	876,912,481	46.8	466,963,860	187.8
6/30/2012	829,040,842	1,364,843,057	535,802,215	60.7	464,228,923	115.4
6/30/2013	892,774,391	1,437,332,817	544,558,426	62.1	461,672,567	118.0
6/30/2014	997,733,237	1,493,864,379	496,131,142	66.8	479,164,016	103.5
6/30/2015*	1,087,707,118	1,504,015,233	416,308,115	72.3	483,640,601	86.1
Total CERS Members						
6/30/2010	\$ 1,985,808,363	\$ 4,833,043,390	\$ 2,847,235,027	41.1%	\$ 2,703,404,040	105.3%
6/30/2011	2,204,241,067	4,721,675,960	2,517,434,893	46.7	2,743,559,808	91.8
6/30/2012	2,341,894,693	3,735,614,345	1,393,719,652	62.7	2,700,775,268	51.6
6/30/2013	2,521,018,588	3,881,226,917	1,360,208,329	65.0	2,697,950,056	50.4
6/30/2014	2,828,932,702	4,110,778,979	1,281,846,277	68.8	2,751,434,303	46.6
6/30/2015	3,085,163,581	4,411,842,673	1,326,679,092	69.9	2,780,356,558	47.7

* Discount rate changed from 7.75% to 7.50%



**INSURANCE BENEFITS
SCHEDULE OF EMPLOYER CONTRIBUTIONS**

Year Ended	Annual Required Contribution	Retiree Drug Subsidy (RDS) Contribution	Employer Contributions	Total Contributions	Percentage Contributed
Non-Hazardous Members					
June 30, 2010	\$266,331,326	\$9,156,991	\$166,607,097	\$175,764,088	66.0%
June 30, 2011	213,429,424	0	186,885,576	186,885,576	87.6
June 30, 2012	214,421,008	0	171,924,836	171,924,836	80.2
June 30, 2013	195,560,870	0	159,992,643	159,992,643	81.8
June 30, 2014	130,651,800	0	123,278,028	123,278,028	94.4
June 30, 2015	119,510,589	0	119,443,608	119,443,608	99.9
Hazardous Members					
June 30, 2010	\$129,227,449	\$1,493,440	\$83,042,875	\$84,536,315	65.4%
June 30, 2011	109,226,667	0	98,592,286	98,592,286	90.3
June 30, 2012	110,762,577	0	92,563,664	92,563,664	83.6
June 30, 2013	102,010,672	0	85,319,393	85,319,393	83.6
June 30, 2014	74,360,438	0	74,791,619	74,791,619	100.6
June 30, 2015	69,102,811	0	71,778,130	71,778,130	103.9
Total CERS Members					
June 30, 2010	\$395,558,775	\$10,650,431	\$249,649,972	\$260,300,403	65.8%
June 30, 2011	322,656,091	0	285,477,862	285,477,862	88.5
June 30, 2012	325,183,585	0	264,488,500	264,488,500	81.3
June 30, 2013	297,571,542	0	245,312,036	245,312,036	82.4
June 30, 2014	205,012,238	0	198,069,647	198,069,647	96.6
June 30, 2015	188,613,400	0	191,221,738	191,221,738	101.4



The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2015. Additional information as of the latest actuarial valuation follows.

Insurance Benefits

	Non-Hazardous Members	Hazardous Members
Valuation date	6/30/2015	6/30/2015
Actuarial cost method	Entry Age	Entry Age
Amortization	Level percent Closed	Level percent Closed
Remaining amortization period	28 years	28 years
Asset valuation method	5 year smoothed Market	5 year smoothed Market
Medical Trend Assumption (Pre-Medicare)	7.50% - 5.00%	7.50% - 5.00%
Medical Trend Assumption (Post-Medicare)	5.50% - 5.00%	5.50% - 5.00%
Year Ultimate Trend	2020	2020
Dollar Contribution Trend	1.50%	1.50%
Actuarial assumptions:		
Investment rate of return*	7.50%	7.50%
*Includes price inflation at	3.25%	3.25%



SCHEDULE A

Valuation Balance Sheet and Solvency Test

The following valuation balance sheets show the assets and liabilities of the retirement system as of the current valuation date of June 30, 2015 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2014. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date.

**VALUATION BALANCE SHEETS
SHOWING THE ASSETS AND LIABILITIES OF THE
COUNTY EMPLOYEES RETIREMENT SYSTEM**

**RETIREMENT BENEFITS
NON-HAZARDOUS CERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 6,474,848,513	\$ 6,117,133,692
Prospective contributions		
Member contributions	\$ 976,915,537	\$ 925,203,934
Employer normal contributions	542,240,368	585,670,648
Unfunded accrued liability contributions	<u>4,265,476,908</u>	<u>3,655,388,924</u>
Total prospective contributions	<u>\$ 5,784,632,813</u>	<u>\$ 5,166,263,506</u>
Total assets	<u>\$ 12,259,481,326</u>	<u>\$ 11,283,397,198</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 6,142,108,967	\$ 5,578,289,754
Present value of benefits payable on account of active members	5,769,618,592	5,410,117,704
Present value of benefits payable on account of inactive members	<u>347,753,767</u>	<u>294,989,740</u>
Total liabilities	<u>\$ 12,259,481,326</u>	<u>\$ 11,283,397,198</u>



**VALUATION BALANCE SHEET
RETIREMENT BENEFITS
HAZARDOUS CERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 2,096,782,956	\$ 1,967,640,027
Prospective contributions		
Member contributions	\$ 276,305,209	\$ 328,795,453
Employer normal contributions	116,909,870	243,669,592
Unfunded accrued liability contributions	<u>1,516,524,591</u>	<u>1,321,185,726</u>
Total prospective contributions	<u>\$ 1,909,739,670</u>	<u>\$ 1,893,650,771</u>
Total assets	<u>\$ 4,006,522,626</u>	<u>\$ 3,861,290,798</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 2,254,151,236	\$ 2,041,681,031
Present value of benefits payable on account of active members	1,708,819,459	1,783,774,089
Present value of benefits payable on account of inactive members	<u>43,551,931</u>	<u>35,835,678</u>
Total liabilities	<u>\$ 4,006,522,626</u>	<u>\$ 3,861,290,798</u>



**VALUATION BALANCE SHEET
RETIREMENT BENEFITS
TOTAL CERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 8,571,631,469	\$ 8,084,773,719
Prospective contributions		
Member contributions	\$ 1,253,220,746	\$ 1,253,999,387
Employer normal contributions	659,150,238	829,340,240
Unfunded accrued liability contributions	<u>5,782,001,499</u>	<u>4,976,574,650</u>
Total prospective contributions	<u>\$ 7,694,372,483</u>	<u>\$ 7,059,914,277</u>
 Total assets	 <u>\$ 16,266,003,952</u>	 <u>\$ 15,144,687,996</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 8,396,260,203	\$ 7,619,970,785
 Present value of benefits payable on account of active members	 7,478,438,051	 7,193,891,793
 Present value of benefits payable on account of inactive members	 <u>391,305,698</u>	 <u>330,825,418</u>
 Total liabilities	 <u>\$ 16,266,003,952</u>	 <u>\$ 15,144,687,996</u>



**VALUATION BALANCE SHEET
INSURANCE BENEFITS
NON-HAZARDOUS CERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 1,997,456,463	\$ 1,831,199,465
Prospective contributions		
Member contributions	\$ 72,682,694	\$ 61,485,213
Employer normal contributions	477,798,719	512,955,032
Unfunded accrued liability contributions	<u>910,370,977</u>	<u>785,715,135</u>
Total prospective contributions	<u>\$ 1,460,852,390</u>	<u>\$ 1,360,155,380</u>
Total assets	<u>\$ 3,458,308,853</u>	<u>\$ 3,191,354,845</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 1,215,933,830	\$ 1,107,884,548
Present value of benefits payable on account of active members	2,085,712,217	1,873,171,963
Present value of benefits payable on account of inactive members	<u>156,662,806</u>	<u>210,298,334</u>
Total liabilities	<u>\$ 3,458,308,853</u>	<u>\$ 3,191,354,845</u>



**VALUATION BALANCE SHEET
INSURANCE BENEFITS
HAZARDOUS CERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 1,087,707,118	\$ 997,733,237
Prospective contributions		
Member contributions	\$ 11,997,640	\$ 13,186,369
Employer normal contributions	141,433,960	265,203,854
Unfunded accrued liability contributions	<u>416,308,115</u>	<u>496,131,142</u>
Total prospective contributions	<u>\$ 569,739,715</u>	<u>\$ 774,521,365</u>
Total assets	<u>\$ 1,657,446,833</u>	<u>\$ 1,772,254,602</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 770,542,575	\$ 662,960,014
Present value of benefits payable on account of active members	866,733,067	1,071,943,003
Present value of benefits payable on account of inactive members	<u>20,171,191</u>	<u>37,351,585</u>
Total liabilities	<u>\$ 1,657,446,833</u>	<u>\$ 1,772,254,602</u>



**VALUATION BALANCE SHEET
INSURANCE BENEFITS
TOTAL CERS MEMBERS**

	June 30, 2015	June 30, 2014
ASSETS		
Current actuarial value of assets	\$ 3,085,163,581	\$ 2,828,932,702
Prospective contributions		
Member contributions	\$ 84,680,334	\$ 74,671,582
Employer normal contributions	619,232,679	778,158,886
Unfunded accrued liability contributions	<u>1,326,679,092</u>	<u>1,281,846,277</u>
Total prospective contributions	<u>\$ 2,030,592,105</u>	<u>\$ 2,134,676,745</u>
 Total assets	 <u><u>\$ 5,115,755,686</u></u>	 <u><u>\$ 4,963,609,447</u></u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 1,986,476,405	\$ 1,770,844,562
 Present value of benefits payable on account of active members	 2,952,445,284	 2,945,114,966
 Present value of benefits payable on account of inactive members	 <u>176,833,997</u>	 <u>247,649,919</u>
 Total liabilities	 <u><u>\$ 5,115,755,686</u></u>	 <u><u>\$ 4,963,609,447</u></u>



The following tables provide the solvency test for non-hazardous and hazardous CERS members.

**Solvency Test
Retirement Benefits
Non-Hazardous CERS Members**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Financed Portion)	Actuarial Value of Assets	(1)	(2)	(3)
6/30/2010	\$ 1,063,746,826	\$ 4,890,659,077	\$ 2,504,616,377	\$ 5,546,857,291	100.0%	91.7%	0.0%
6/30/2011	1,110,967,160	5,209,783,924	2,597,333,941	5,629,611,183	100.0	86.7	0.0
6/30/2012	1,117,549,337	5,416,932,995	2,605,085,363	5,547,235,599	100.0	81.8	0.0
6/30/2013	1,149,610,832	5,638,370,836	2,590,894,446	5,637,094,483	100.0	79.6	0.0
6/30/2014	1,204,383,085	5,873,279,494	2,694,860,037	6,117,133,692	100.0	83.6	0.0
6/30/2015	1,216,584,592	6,489,862,734	3,033,878,095	6,474,848,513	100.0	81.0	0.0

**Solvency Test
Retirement Benefits
Hazardous CERS Members**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Financed Portion)	Actuarial Value of Assets	(1)	(2)	(3)
6/30/2010	\$ 369,612,720	\$ 1,622,684,455	\$ 679,854,732	\$ 1,749,464,388	100.0%	85.0%	0.0%
6/30/2011	382,072,055	1,768,511,545	708,457,452	1,779,545,393	100.0	79.0	0.0
6/30/2012	381,672,428	1,889,884,303	738,435,316	1,747,379,297	100.0	72.3	0.0
6/30/2013	390,471,059	1,988,029,963	745,704,571	1,801,691,410	100.0	71.0	0.0
6/30/2014	415,069,629	2,077,516,709	796,239,415	1,967,640,027	100.0	74.7	0.0
6/30/2015	422,358,688	2,297,703,167	893,245,692	2,096,782,956	100.0	72.9	0.0



**Solvency Test
Insurance Benefits
Non-Hazardous CERS Members**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1)	(2)	(3)	Actuarial Value of Assets	(1)	(2)	(3)
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed Portion)				
6/30/2010	\$ 0	\$ 1,526,533,372	\$ 1,631,806,802	\$ 1,293,038,593	100.0%	84.7%	0.0%
6/30/2011	0	1,460,808,255	1,613,164,950	1,433,450,793	100.0	98.1	0.0
6/30/2012	0	1,146,907,750	1,223,863,538	1,512,853,851	100.0	100.0	29.9
6/30/2013	0	1,205,599,287	1,238,294,813	1,628,244,197	100.0	100.0	34.1
6/30/2014	0	1,318,182,882	1,298,731,718	1,831,199,465	100.0	100.0	39.5
6/30/2015	0	1,372,596,636	1,535,230,804	1,997,456,463	100.0	100.0	40.7

**Solvency Test
Insurance Benefits
Hazardous CERS Members**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1)	(2)	(3)	Actuarial Value of Assets	(1)	(2)	(3)
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed Portion)				
6/30/2010	\$ 0	\$ 814,300,256	\$ 860,402,960	\$ 692,769,770	100.0%	85.1%	0.0%
6/30/2011	0	771,631,287	876,071,468	770,790,274	100.0	99.9	0.0
6/30/2012	0	575,099,089	789,743,968	829,040,842	100.0	100.0	32.2
6/30/2013	0	660,955,331	776,377,486	892,774,391	100.0	100.0	29.9
6/30/2014	0	700,311,599	793,552,780	997,733,237	100.0	100.0	37.5
6/30/2015	0	790,713,766	713,301,467	1,087,707,118	100.0	100.0	41.6



SCHEDULE B
Development of Actuarial Value of Assets
Retirement Benefits
Non-Hazardous Members

Valuation date June 30:	2014	2015	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	\$ 5,637,094,483	\$ 6,117,133,692				
B. Market Value End of Year	6,507,300,157	6,416,853,506				
C. Market Value Beginning of Year	5,780,830,355	6,507,300,157				
D. Cash Flow						
D1. Contributions	446,690,113	446,166,560				
D2. Benefit Payments	(597,136,388)	(628,858,436)				
D3. Administrative Expenses	(18,614,538)	(18,212,642)				
D4. Investment Expenses	<u>(25,695,263)</u>	<u>(44,163,869)</u>				
D5. Net	(194,756,076)	(245,068,387)				
E. Investment Income						
E1. Market Total: B.-C.-D5.	921,225,878	154,621,736				
E2. Assumed Rate	7.75%	7.75%				
E3. Amount for Immediate Recognition	467,158,509	540,694,581				
E4. Amount for Phased-In Recognition	454,067,369	(386,072,845)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	90,813,474	(77,214,569)	0	0	0	0
F2. First Prior Year	33,352,842	90,813,474	(77,214,569)	0	0	0
F3. Second Prior Year	(88,282,845)	33,352,842	90,813,474	(77,214,569)	0	0
F4. Third Prior Year	103,419,725	(88,282,845)	33,352,842	90,813,474	(77,214,569)	0
F5. Fourth Prior Year	<u>68,333,580</u>	<u>103,419,725</u>	<u>(88,282,845)</u>	<u>33,352,842</u>	<u>90,813,474</u>	<u>(77,214,569)</u>
F6. Total Recognized Investment Gain	207,636,776	62,088,627	(41,331,098)	46,951,747	13,598,905	(77,214,569)
G. Actuarial Value End of Year:						
A.+D5.+E3.+F6.	\$ 6,117,133,692	\$ 6,474,848,513				
H. Difference Between Market & Actuarial Values	\$ 390,166,465	\$ (57,995,007)	\$ (16,663,909)	\$ (63,615,656)	\$ (77,214,569)	\$ 0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



**Development of Actuarial Value of Assets
Retirement Benefits
Hazardous Members**

Valuation date June 30:	2014	2015	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	\$ 1,801,691,410	\$ 1,967,640,027				
B. Market Value End of Year	2,082,998,414	2,073,397,045				
C. Market Value Beginning of Year	1,830,657,969	2,082,998,414				
D. Cash Flow						
D1. Contributions	157,870,670	157,861,279				
D2. Benefit Payments	(192,298,833)	(203,244,240)				
D3. Administrative Expenses	(1,720,998)	(1,287,827)				
D4. Investment Expenses	<u>(8,220,545)</u>	<u>(14,240,230)</u>				
D5. Net	(44,369,706)	(60,911,018)				
E. Investment Income						
E1. Market Total: B.-C.-D5.	296,710,151	51,309,649				
E2. Assumed Rate	7.75%	7.75%				
E3. Amount for Immediate Recognition	148,695,758	173,864,114				
E4. Amount for Phased-In Recognition	148,014,393	(122,554,465)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	29,602,879	(24,510,893)	0	0	0	0
F2. First Prior Year	8,909,239	29,602,879	(24,510,893)	0	0	0
F3. Second Prior Year	(31,969,450)	8,909,239	29,602,879	(24,510,893)	0	0
F4. Third Prior Year	34,158,058	(31,969,450)	8,909,239	29,602,879	(24,510,893)	0
F5. Fourth Prior Year	<u>20,921,839</u>	<u>34,158,058</u>	<u>(31,969,450)</u>	<u>8,909,239</u>	<u>29,602,879</u>	<u>(24,510,893)</u>
F6. Total Recognized Investment Gain	61,622,565	16,189,833	(17,968,225)	14,001,225	5,091,986	(24,510,893)
G. Actuarial Value End of Year:						
A.+D5.+E3.+F6.	\$ 1,967,640,027	\$ 2,096,782,956				
H. Difference Between Market & Actuarial Values	\$ 115,358,387	\$ (23,385,911)	\$ (5,417,686)	\$ (19,418,911)	\$ (24,510,893)	\$ 0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



**Development of Actuarial Value of Assets
Insurance Benefits
Non-Hazardous Members**

Valuation date June 30:	2014	2015	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	\$ 1,628,244,197	\$ 1,831,199,465				
B. Market Value End of Year	1,899,557,376	1,948,454,097				
C. Market Value Beginning of Year	1,633,696,661	1,899,557,376				
D. Cash Flow						
D1. Contributions	130,842,429	126,700,611				
D2. Benefit Payments	(96,804,206)	(113,734,556)				
D3. Administrative Expenses	(507,954)	(787,341)				
D4. Investment Expenses	<u>(7,387,530)</u>	<u>(13,082,126)</u>				
D5. Net	26,142,739	(903,412)				
E. Investment Income						
E1. Market Total: B.-C.-D5.	239,717,976	49,800,133				
E2. Assumed Rate	7.75%	7.75%				
E3. Amount for Immediate Recognition	135,298,319	160,769,748				
E4. Amount for Phased-In Recognition	104,419,657	(110,969,615)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	20,883,931	(22,193,923)	0	0	0	0
F2. First Prior Year	6,696,406	20,883,931	(22,193,923)	0	0	0
F3. Second Prior Year	(36,271,274)	6,696,406	20,883,931	(22,193,923)	0	0
F4. Third Prior Year	37,275,522	(36,271,274)	6,696,406	20,883,931	(22,193,923)	0
F5. Fourth Prior Year	<u>12,929,625</u>	<u>37,275,522</u>	<u>(36,271,277)</u>	<u>6,696,406</u>	<u>20,883,931</u>	<u>(22,193,923)</u>
F6. Total Recognized Investment Gain	41,514,210	6,390,662	(30,884,863)	5,386,414	(1,309,992)	(22,193,923)
G. Actuarial Value End of Year:						
A.+D5.+E3.+F6.	\$ 1,831,199,465	\$ 1,997,456,463				
H. Difference Between Market & Actuarial Values	\$ 68,357,911	\$ (49,002,366)	\$ (18,117,503)	\$ (23,503,917)	\$ (22,193,923)	\$ 0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



**Development of Actuarial Value of Assets
Insurance Benefits
Hazardous Members**

Valuation date June 30:	2014	2015	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	\$ 892,774,391	\$ 997,733,237				
B. Market Value End of Year	1,034,307,636	1,061,560,788				
C. Market Value Beginning of Year	894,232,297	1,034,307,636				
D. Cash Flow						
D1. Contributions	75,914,753	72,870,851				
D2. Benefit Payments	(60,842,197)	(65,555,654)				
D3. Administrative Expenses	(274,768)	(339,023)				
D4. Investment Expenses	<u>(4,075,256)</u>	<u>(7,175,588)</u>				
D5. Net	10,722,532	(199,414)				
E. Investment Income						
E1. Market Total: B.-C.-D5.	129,352,807	27,452,566				
E2. Assumed Rate	7.75%	7.75%				
E3. Amount for Immediate Recognition	73,951,673	87,604,757				
E4. Amount for Phased-In Recognition	55,401,134	(60,152,191)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	11,080,227	(12,030,438)	0	0	0	0
F2. First Prior Year	3,554,157	11,080,227	(12,030,438)	0	0	0
F3. Second Prior Year	(18,373,572)	3,554,157	11,080,227	(12,030,438)	0	0
F4. Third Prior Year	18,338,164	(18,373,572)	3,554,157	11,080,227	(12,030,438)	0
F5. Fourth Prior Year	<u>5,685,665</u>	<u>18,338,164</u>	<u>(18,373,572)</u>	<u>3,554,157</u>	<u>11,080,227</u>	<u>(12,030,438)</u>
F6. Total Recognized Investment Gain	20,284,641	2,568,538	(15,769,626)	2,603,946	(950,211)	(12,030,438)
G. Actuarial Value End of Year:						
A.+D5.+E3.+F6.	\$ 997,733,237	\$ 1,087,707,118				
H. Difference Between Market & Actuarial Values	\$ 36,574,399	\$ (26,146,330)	\$ (10,376,704)	\$ (12,980,650)	\$ (12,030,438)	\$ 0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



SCHEDULE C

STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the valuation were based on the actuarial experience study for the five-year period ending June 30, 2013, submitted April 30, 2014, and adopted by the Board on December 4, 2014.

INVESTMENT RATE OF RETURN: 7.50% per annum, compounded annually for retirement and insurance benefits.

PRICE INFLATION: 3.25% per annum, compounded annually.

PAYROLL GROWTH: 4.00% per annum, compounded annually.

SALARY INCREASES: The assumed annual rates of future salary increases for both non-hazardous and hazardous members are as follows and include inflation at 4.00% per annum:

Service Years	Annual Rates of Salary Increases				
	Merit & Seniority		Base (Economy)	Increase Next Year	
	Non-Hazardous	Hazardous		Non-Hazardous	Hazardous
0-1	8.17%	14.90%	4.00%	12.50%	19.50%
1-2	4.81%	5.77%	4.00%	9.00%	10.00%
2-3	1.44%	1.92%	4.00%	5.50%	6.00%
3-4	1.44%	1.20%	4.00%	5.50%	5.25%
4-5	0.96%	0.96%	4.00%	5.00%	5.00%
5-6	0.96%	0.48%	4.00%	5.00%	4.50%
6-7	0.72%	0.00%	4.00%	4.75%	4.00%
7-8	0.72%	0.00%	4.00%	4.75%	4.00%
8-9	0.48%	0.00%	4.00%	4.50%	4.00%
9-10	0.48%	0.00%	4.00%	4.50%	4.00%
10 & Over	0.24%	0.00%	4.00%	4.25%	4.00%

DISABILITY: Representative assumed annual rates of disability for both non-hazardous and hazardous members are as follows:

Nearest Age	Annual Rates of Disability			
	Non-Hazardous		Hazardous	
	Male	Female	Male	Female
20	0.02%	0.02%	0.05%	0.05%
30	0.03%	0.03%	0.09%	0.09%
40	0.07%	0.07%	0.20%	0.20%
50	0.19%	0.19%	0.56%	0.56%
60	0.49%	0.49%	1.46%	1.46%



RETIREMENT: The assumed annual rates of retirement for both non-hazardous and hazardous members are as follows:

Annual Rates of Retirement					
Non-Hazardous			Hazardous		
Age	Those Eligible for Service Retirement*	Those Eligible for Service Retirement**	Service	Those Eligible for Service Retirement+	Those Eligible for Service Retirement++
55	5.0%		20	22.5%	
56	6.0%		21	22.5%	
57	7.0%		22	22.5%	
58	7.0%		23	22.5%	
59	8.0%		24	30.0%	
60	9.0%	9.0%	25	33.0%	22.5%
61	15.0%	15.0%	26	33.0%	22.5%
62	18.0%	18.0%	27	36.0%	22.5%
63	18.0%	18.0%	28	39.0%	22.5%
64	18.0%	18.0%	29	55.0%	30.0%
65	18.0%	18.0%	30	33.0%	33.0%
66	18.0%	18.0%	31	33.0%	33.0%
67	18.0%	18.0%	32	50.0%	36.0%
68	18.0%	18.0%	33	40.0%	39.0%
69	18.0%	18.0%	34	40.0%	55.0%
70	18.0%	18.0%	35	40.0%	33.0%
71	18.0%	18.0%	36	40.0%	33.0%
72	18.0%	18.0%	37	40.0%	50.0%
73	18.0%	18.0%	38	40.0%	40.0%
74	18.0%	18.0%	39	40.0%	40.0%
75	100.0%	100.0%	40	40.0%	40.0%

* For members participating before September 1, 2008. If service is at least 27 years, the rate is 30%.

** For members participating on or after September 1, 2008. If age plus service is at least 87, the rate is 30%.

+ For members participating before September 1, 2008. The annual rate of service retirement is 100% at age 62.

++ For members participating on or after September 1, 2008. The annual rate of service retirement is 100% at age 60.



WITHDRAWAL: The assumed annual rates of withdrawal for both non-hazardous and hazardous members are as follows:

Service Years	Annual Rates of Withdrawal	
	Non-Hazardous	Hazardous
0-1	28.00%	20.50%
1-2	16.00%	13.00%
2-3	12.00%	10.50%
3-4	10.00%	9.00%
4-5	8.00%	8.00%
5-6	6.00%	7.00%
6-7	5.00%	7.00%
7-8	5.00%	6.00%
8-13	4.00%	6.00%
14 & Over	3.00%	6.00%

DEATH BEFORE RETIREMENT: The rates of mortality for the period before retirement are according to the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (multiplied by 50% for males and 30% for females).

DEATH AFTER RETIREMENT: The rates of mortality for the period after service retirement are according to the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (set back 1 year for females) for all healthy retired members and beneficiaries. The RP-2000 Combined Disabled Mortality Table projected with Scale BB to 2013 (set back 4 years for males) is used for the period after disability retirement. These assumptions are used to measure the probabilities of each benefit payment being made after retirement. These assumptions contain margin for mortality improvements.

PERCENT MARRIED: 100% of employees are assumed to be married, with the wife 3 years younger than the husband.

DEPENDENT CHILDREN: For hazardous members' duty-related death benefits, it is assumed that the member is survived by two dependent children each age 6.

FORM OF PAYMENT: Participants are assumed to elect a life-only form of payment.

ASSET VALUATION METHOD: Five-year market related actuarial value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the ultimate assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected actuarial value.



ACTUARIAL COST METHOD: Costs were determined using the Entry Age Normal, Level Percentage of Pay Actuarial Cost Method. Under this method, a calculation is made for retirement benefits to determine the uniform and constant percentage rate of contribution which, if applied to the compensation of the average new member during the entire period of his or her anticipated covered service, would be required to meet the cost of benefits payable. Actuarial gains and losses are reflected in the unfunded actuarial accrued liability.

MULTIPLE STATUS/MULTIPLE SYSTEM MEMBERS: Some members may be represented under more than one retirement system and/or may have more than one status (e.g., active in one system, deferred vested in another and retired from a different system). For pension purposes, members that are active in one System but have service in another are assumed to retire from the System in which they are currently active. Any deferred pension benefits from another System are assumed to begin once the member terminates from their current active position. The insurance liabilities for multiple status/multiple system members are calculated assuming only one benefit is payable across all Systems and that benefit is payable from the combination of status and System which produces the highest economic value to the member.

AFFORDABLE CARE ACT (ACA): The impact of the Affordable Care Act (ACA) was addressed in this valuation. Review of the information currently available did not identify any specific provisions of the ACA that are anticipated to significantly impact results. While the impact of certain provisions such as the excise tax on high-value health insurance plans beginning in 2018 (if applicable), mandated benefits and participation changes due to the individual mandate should be recognized in the determination of liabilities, overall future plan costs and the resulting liabilities are driven by the assumed rate of health care inflation (i.e., trend). The trend assumption forecasts the anticipated increase to initial per capita costs, taking into account health care cost inflation, increases in benefit utilization, government-mandated benefits, and technological advances. Given the uncertainty regarding the ACA's implementation (e.g., the impact of excise tax on high-value health insurance plans, changes in participation resulting from the implementation of state-based health insurance exchanges), continued monitoring of the ACA's impact on the insurance liability will be required.

HEALTH CARE BENEFITS VALUED: Medical and drug benefits for retirees under age 65 and Medicare eligible.

HEALTH CARE SPOUSE AGE DIFFERENCE: Wives are assumed to be three years younger than husbands.

HEALTH CARE COST TREND RATES: Following is a chart detailing trend assumptions.

Year	Annual Rate of Increase		
	Under Age 65	Age 65 & Older	Dollar Contribution*
2015	7.50%	5.50%	1.50%
2016	6.75%	5.25%	1.50%
2017	6.25%	5.00%	1.50%
2018	5.75%	5.00%	1.50%
2019	5.25%	5.00%	1.50%
2020 & Beyond	5.00%	5.00%	1.50%

* Applies to members participating on or after July 1, 2003



HEALTH CARE AGE RELATED MORBIDITY: For retirees ages 65 and older, per capita health care costs are adjusted to reflect expected health care cost changes related to age. The increase to the net incurred claims was assumed to be:

Participant Age	Annual Increase
65 – 69	3.00%
70 – 74	2.50%
75 – 79	2.00%
80 – 84	1.00%
85 – 89	0.50%
90 & Beyond	0.00%

For the retiree health care liabilities of those under age 65, the current premium charged by the Kentucky Employees' Health Plan (KEHP) is used as the base cost and is projected forward using the healthcare trend assumption. No implicit rate subsidy is calculated or recognized as the implicit rate subsidy is deemed the responsibility of the KEHP.

HEALTH CARE DEFERRED VESTED BENEFIT RECIPIENT INITIAL AGE OF BENEFIT RECEIPT FOR MEMBERS: Health care benefits are assumed to begin at the following ages for deferred vested benefit recipients:

Deferred Vested Initial Age of Benefit Receipt		
Applies Only to Members with Non-Hazardous Service		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
55	55	60

Deferred Vested Initial Age of Benefit Receipt		
Applies Only to Members with Hazardous Service		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
50	50	50



HEALTH CARE ANTICIPATED PLAN PARTICIPATION: Representative values of the assumed annual rates of member participation and spouse coverage are as follows:

Plan Elections of Covered Members Age 65 and Older as of January 1, 2016		
Kentucky Retirement System Health Plan	Non-Hazardous	Hazardous
Medical Only	5.71%	2.92%
Essential	2.72%	1.44%
Premium	91.58%	95.64%

Retirement Participation Rates			
Service at Retirement	Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
Under 10	50.00%	100.00%	100.00%
10 – 14	75.00%	100.00%	100.00%
15 – 19	90.00%	100.00%	100.00%
20+	100.00%	100.00%	100.00%

Disability/Death Participation Rates	
Members Participating Before July 1, 2003	
Duty-Disability	Duty Death-In-Service
100.00%	100.00%

Deferred Vested Member Participation Rates		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
50.00%	100.00%	100.00%

Members Electing Spouse Coverage		
Applies Only to Members with Hazardous Service		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
75.00%	75.00%	75.00%



HEALTH CARE MONTHLY PLAN COSTS: Assumed per capita health care costs were based on past experience and trended based on the assumptions. Following are charts detailing retiree per capita assumptions for the year following the valuation date. The amounts include medical and drug costs. Members under 65 are assumed to elect the LivingWell PPO. For retirees ages 65 and older, the full costs shown are before averaging. The average costs are then normalized to age 65 and age adjusted in calculating liabilities. The dollar amount contribution level is the cost to the system per year of service for members participating on or after July 1, 2003.

Under Age 65 (KEHP) Full Costs as of January 1, 2016				
Tier Elected	LivingWell CDHP	LivingWell PPO	Standard PPO	Standard CDHP
Single	\$ 702.10	\$ 721.14	\$ 677.74	\$ 663.68
Parent Plus	967.18	1,023.04	963.36	930.34
Couple	1,302.74	1,564.20	1,474.84	1,429.26
Family	1,453.94	1,738.40	1,640.84	1,591.52
Family C-R	810.00	865.64	814.72	792.90

Age 65 and Older Full Costs as of January 1, 2016	
Kentucky Retirement System Health Plan - Medical Only	\$158.25
Kentucky Retirement System Health Plan - Essential	77.76
Kentucky Retirement System Health Plan - Premium	244.25

Age 65 and Older Average Cost as of the Valuation Date Based on Actual Retiree Elections	
Non-Hazardous	Hazardous
\$218.33	\$227.19

Dollar Amount Contribution Level Per Year of Service as of July 1, 2015	
Applies to members participating on or after July 1, 2003	
Non-Hazardous	Hazardous
\$12.80	\$19.19



SCHEDULE D

SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS

This schedule summarizes the major retirement benefit provisions of CERS included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year: July 1 through June 30

Non-Hazardous Normal Retirement:

Members whose participation began before 8/1/2004

<i>Age Requirement</i>	65
<i>Service Requirement</i>	At least one month of non-hazardous duty service credit
<i>Amount</i>	If a member has at least 48 months of service, the monthly benefit is 2.20% multiplied by final average compensation, multiplied by years of service. Final compensation is calculated by taking the average of the highest five (5) fiscal years of salary. If the number of months of service credit during the five (5) year period is less than forty-eight (48), one (1) or more additional fiscal years shall be used. If a member has less than 48 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.

Members whose participation began on or after 8/1/2004, but before 9/1/2008

<i>Age Requirement</i>	65
<i>Service Requirement</i>	At least one month of non-hazardous duty service credit
<i>Amount</i>	If a member has at least 48 months of service, the monthly benefit is 2.00% multiplied by final average compensation, multiplied by years of service. Final compensation is calculated by taking the average of the highest five (5) fiscal years of salary. If the number of months of service credit during the five (5) year period is less than forty-eight (48), one (1) or more additional fiscal years shall be used. If a member has less than 48 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.



Non-Hazardous Normal Retirement (continued):

Members whose participation began on or after 9/1/2008 but before 1/1/2014

Requirement Age 65 with 60 months of non-hazardous duty service credit, or age 57 if age plus service equals at least 87.

Amount The monthly benefit is the following benefit factor based on service credit at retirement plus 2.00% for each year of service greater than 30 years, multiplied by final average compensation, multiplied by years of service.

Service Credit	Benefit Factor
10 years or less	1.10%
10+ – 20 years	1.30%
20+ – 26 years	1.50%
26+ – 30 years	1.75%

Final compensation is calculated by taking the average of the last (not highest) five (5) complete fiscal years of salary. Each fiscal year used to determine final compensation must contain twelve (12) months of service credit.

If a member has less than 60 months of service, the monthly benefit is the actuarial equivalent of two times the member’s contributions with interest.

Members whose participation began on or after 1/1/2014

Requirement Age 65 with 60 months of non-hazardous duty service credit, or age 57 if age plus service equals at least 87.

Amount Each year that a member is an active contributing member to the System, the member and the member’s employer will contribute 5.00% and 4.00% of creditable compensation respectively into a hypothetical account. This hypothetical account will earn interest annually on both the member’s and employer’s contribution at a minimum rate of 4%. If the System’s geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year.

Upon retirement the hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or annuitized into a single life annuity option.



Hazardous Normal Retirement:

Members whose participation began before 9/1/2008

- Age Requirement* 55
- Service Requirement* At least one month of hazardous duty service credit
- Amount* If a member has at least 60 months of service, the monthly benefit is 2.50% multiplied by final average compensation, multiplied by years of service.

Final compensation is calculated by taking the average of the highest three (3) fiscal years of salary. If the number of months of service credit during the three (3) year period is less than twenty-four (24), one (1) or more additional fiscal years shall be used.

If a member has less than 60 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.

Members whose participation began on or after 9/1/2008 but before 1/1/2014

- Age Requirement* 60
- Service Requirement* At least 60 months of hazardous duty service credit
- Amount* The monthly benefit is the following benefit factor based on service credit at retirement, multiplied by final average compensation, multiplied by years of service.

Service Credit	Benefit Factor
10 years or less	1.30%
10+ – 20 years	1.50%
20+ – 25 years	2.25%
25+ years	2.50%

Final compensation is calculated by taking the average of the highest three (3) complete fiscal years of salary. Each fiscal year used to determine final compensation must contain twelve (12) months of service credit.

If a member has less than 60 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.



Hazardous Normal Retirement (continued):

Members whose participation began on or after 1/1/2014

<i>Age Requirement</i>	60
<i>Service Requirement</i>	At least 60 months of hazardous duty service credit or 25 or more years of service, with no age requirement
<i>Amount</i>	<p>Each year that a member is an active contributing member to the System, the member and the member's employer will contribute 8.00% and 7.50% of creditable compensation respectively into a hypothetical account. This hypothetical account will earn interest annually on both the member's and employer's contribution at a minimum rate of 4%. If the System's geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year.</p> <p>Upon retirement the hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or annuitized into a single life annuity option.</p>

Non-Hazardous Early Retirement:

Members whose participation began before 9/1/2008

<i>Requirement</i>	Age 55 with 60 months of service or any age with 25 years of service.
<i>Amount</i>	Normal retirement benefit reduced by 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member is younger than age 65 or has less than 27 years of service, whichever is smaller.



Non-Hazardous Early Retirement (continued):

Members whose participation began on or after 9/1/2008 but before 1/1/2014

<i>Requirement</i>	Age 60 with 10 years of service.
<i>Amount</i>	Normal retirement benefit reduced by 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member is younger than age 65, or does not meet the rule of 87 (age plus service) and is younger than age 57, whichever is smaller.

Hazardous Early Retirement:

Members whose participation began before 9/1/2008

<i>Requirement</i>	Age 50 with 15 years of service or any age with 20 years of service.
<i>Amount</i>	Normal retirement benefit reduced by 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member is younger than age 55 or has less than 20 years of service, whichever is smaller.

Hazardous Early Retirement:

Members whose participation began on or after 9/1/2008 but before 1/1/2014

<i>Requirement</i>	Age 50 with 15 years of service or any age with 25 years of service.
<i>Amount</i>	Normal retirement benefit reduced by 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member is younger than age 60 or has less than 25 years of service, whichever is smaller.

Non-Hazardous Disability:

<i>Age Requirement</i>	None
<i>Service Requirement</i>	60 months

Members whose participation began before 8/1/2004

Normal retirement benefit except that service credit will be added to total service for the period from the last day of plan employment to the member's 65th birthday or until the combined total service as of the last day of paid employment and added service equals 25 years. The total amount of service credit added shall not exceed the member's actual service credit on the last day of paid employment. For members with at least 25 years of service but less than 27 years of service, total service shall be 27 years. For employees with 27 or more years of service credit, actual service will be used.



Non-Hazardous Disability (continued):

A contributing member in a non-hazardous position who is disabled in the line of duty is entitled to a retirement benefit of not less than 25% of the member's final monthly rate of pay plus 10% of the member's final monthly rate of pay for each dependent child. The maximum dependent child's benefit is 40% of the member's final monthly rate of pay.

Members whose participation began on or after 8/1/2004 but before 1/1/2014

Normal retirement benefit based on actual service with no penalty or, if larger, 20% of the Final Rate of Pay. May apply for disability even after normal retirement age.

Members whose participation began on or after 1/1/2014

The hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or an annuity equal to the larger of 20% of the member's monthly final rate of pay or the annuitized hypothetical account into a single life annuity option.

Hazardous Disability:

Age Requirement

None

Service Requirement

60 months (waived if in line of duty disability)

Members whose participation began before 8/1/2004

Normal retirement benefit except if the member's total service credit is less than 20 years, service credit will be added for the period from the last day of paid employment to the member's 55th birthday.

The maximum service credit added will not exceed the total service the member had on this last day of paid employment and the maximum service credit for calculating his retirement allowance, including total service and service added will not exceed 20 years. May not apply if eligible for an unreduced retirement allowance.

A member in a hazardous position who is disabled in the line of duty is entitled to the normal retirement benefit based on years of service and final compensation determined as of the date of disability (no penalty), except that the monthly retirement allowance payable shall not be less than 25% of the member's monthly final rate of pay. Each dependent child shall receive 10% of the disabled member's monthly final rate of pay; however the total maximum dependent children's benefit shall not exceed 40% of the member's monthly final rate of pay.



Hazardous Disability (continued):

Members whose participation began on or after 8/1/2004 but before 1/1/2014

Normal retirement benefit based on years of service and final compensation determined as of the date of disability (no penalty) or, if larger, 25% of the member's monthly final rate of pay. May apply for disability even after normal retirement age.

Members whose participation began on or after 1/1/2014

The hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or an annuity equal to the larger of 25% of the member's monthly final rate of pay or the annuitized hypothetical account into a single life annuity option.

Vesting:

Members whose participation began before 9/1/2008

Age Requirement

None

Service Requirement

60 months. Service purchased after August 1, 2004 does not count toward vesting insurance benefits. Service purchased by employees who began participating on or after August 1, 2004 does not count toward vesting retirement benefits. Recontribution of refunds and omitted service purchases are the exception to this rule for service requirement.

Amount

Normal retirement benefit deferred to normal retirement age or reduced benefit payable at early retirement age.

Normal Retirement Age

65 for non-hazardous members and 55 for hazardous members.

Members whose participation began on or after 9/1/2008 but before 1/1/2014

Age Requirement

None

Service Requirement

60 months. Service purchased after August 1, 2004 does not count toward vesting insurance benefits.

Service purchased by employees who began participating on or after August 1, 2004 does not count toward vesting retirement benefits. Recontribution of refunds and omitted service purchases are the exception to this rule for service requirement.

Amount

Normal retirement benefit deferred to normal retirement age or reduced benefit payable at early retirement age.



Vesting (continued):

<i>Normal Retirement Age</i>	65 for non-hazardous members and 60 for hazardous members.
<i>Members whose participation began on or after 1/1/2014</i>	
<i>Age Requirement</i>	None
<i>Service Requirement</i>	60 months.
<i>Amount</i>	Upon termination the hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or the member can elect to leave the hypothetical account balance in the System. If the member does not withdraw the account balance, it will continue to earn 4% interest. Upon reaching normal retirement age the member can apply for retirement and receive the account balance as a lump sum payment or annuitize the account balance into a single life annuity.

Pre-Retirement Death Benefit (not in line of duty):

<i>Members whose participation began before 1/1/2014</i>	
<i>Requirement</i>	Eligible for Normal or Early Retirement, or any age in active employment with 60 months service, or any age and not in active employment with at least 144 months of service.
<i>Amount</i>	Benefit equal to the benefit the member would have received had the member retired on the day before the date of death and elected a 100% joint and survivor form. Benefit is actuarially reduced if member is less than normal retirement age at the date of death.
<i>Members whose participation began on or after 1/1/2014</i>	
<i>Requirement</i>	60 months service
<i>Amount</i>	The maximum of the benefit equal to the benefit the member would have received had the member retired on the day before the date of death.



Spouse's Pre-Retirement Death Benefit (in line of duty):

<i>Requirement</i>	None
<i>Amount</i>	The spouse may choose (1) a \$10,000 lump sum payment and monthly payments of 25% of the member's final monthly rate of pay or (2) benefit options offered under death not in line of duty.

Dependent Non-Spouse's Death Benefit (in line of duty) – Hazardous Plan:

<i>Requirement</i>	None
<i>Amount</i>	The non-spouse may choose (1) a \$10,000 lump sum payment or (2) benefit options offered under death not in line of duty.

Dependent Child's Death Benefit (in line of duty):

<i>Requirement</i>	None
<i>Amount</i>	10% of member's final monthly rate of pay. Dependent child payments cannot exceed 40% of the member's monthly final rate of pay.

Post-Retirement Death Benefit:

<i>Requirement</i>	Retired member in receipt of monthly benefit based on at least 48 months or more of combined service with KERS, CERS or SPRS.
<i>Amount</i>	\$5,000

Non-Hazardous Member Contributions:

<i>Members whose participation began before 9/1/2008</i>	5% of all creditable compensation. Interest paid on the members' accounts is currently 2.5% shall not be less than 2.0%. Member entitled to a full refund of contributions with interest.
--	---

<i>Members whose participation began on or after 9/1/2008</i>	6% of all creditable compensation, with 5% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Interest paid on the members' accounts will be set at 2.5%. Member entitled to a full refund of contributions and interest in their individual account, however, the 1% contributed to the insurance fund is non-refundable.
---	--



Non-Hazardous Member Contributions (continued):

Members whose participation began on or after 1/1/2014

6% of all creditable compensation, with 5% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Member entitled to a full refund of contributions and interest on the member's portion of the hypothetical account, however, the 1% contributed to the insurance fund is non-refundable.

Hazardous Member Contributions:

Members whose participation began before 9/1/2008

8% of all creditable compensation. Interest paid on the members' accounts is currently 2.5% shall not be less than 2.0%. Member entitled to a full refund of contributions with interest.

Members whose participation began on or after 9/1/2008

9% of all creditable compensation, with 8% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Interest paid on the members' accounts will be set at 2.5%. Member entitled to a full refund of contributions and interest in their individual account, however, the 1% contributed to the insurance fund is non-refundable.

Members whose participation began on or after 1/1/2014

9% of all creditable compensation, with 8% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Member entitled to a full refund of contributions and interest on the member's portion of the hypothetical account, however, the 1% contributed to the insurance fund is non-refundable.



Non-Hazardous Insurance Plan for Retirees:

Members whose participation began before 7/1/2003

Requirement

In receipt of a monthly retirement allowance.

Amount

The Retirement System pays a portion of lifetime medical premiums for retirees based on the retired member's years of service credit. The percentage of the monthly contribution rate paid is show in the following table.

Service Credit	Percentage Paid*
0 – 3 years	0%
4 – 9 years	25%
10 – 14 years	50%
15 – 19 years	75%
20 or more years	100%

**100% of the monthly contribution is paid towards the health insurance for a retired member who is totally disabled from any employment as a result of a duty-related injury regardless of actual service. 100% of the monthly contribution is paid toward health insurance for the spouse and dependent children of a member who dies as a result of a duty related injury, regardless of the deceased member's service. The insurance benefit will be provided as long as the spouse and dependent children are eligible for a monthly retirement benefit.*

Members whose participation began on or after 7/1/2003, but before 9/1/2008

Requirement

Monthly retirement allowance with at least 120 months of service at retirement.

Amount

The Retirement System pays \$12.80 per month for each year of earned service for retirees. This amount is shown as of the valuation date and is increased annually 1.5%.

Members whose participation began on or after 9/1/2008

Requirement

Monthly retirement allowance with at least 180 months of service at retirement.

Amount

The Retirement System pays \$10 per month for each year of earned service for retirees. This amount will be increased annually by 1.5%.



Hazardous Insurance Plan for Retirees:

Members whose participation began before 7/1/2003

Requirement

In receipt of a monthly retirement allowance.

Amount

The Retirement System pays a portion of lifetime medical premiums for retirees, their spouse and their dependents based on the retired member's years of service credit. The percentage of the monthly contribution rate paid is show in the following table.

Service Credit	Percentage Paid*
0 – 3 years	0%
4 – 9 years	25%
10 – 14 years	50%
15 – 19 years	75%
20 or more years	100%

**100% of the monthly contribution is paid towards the health insurance for a member, member's spouse and dependents if the member is disabled in the line of duty as a result of a duty-related injury, regardless of actual service. 100% of the monthly contribution is paid toward health insurance for the spouse and dependent children of a member who dies in the line of duty regardless of the deceased member's service. The insurance benefit will be provided as long as the spouse and dependent children are eligible for a monthly retirement benefit.*

Members whose participation began on or after 7/1/2003, but before 9/1/2008

Requirement

Monthly retirement allowance with at least 120 months of service at retirement.

Amount

The Retirement System pays \$19.19 per month for each year of earned service for retirees. Upon the retiree's death, the surviving spouse will receive \$12.80 per month for each year of earned. These amounts are shown as of the valuation date and are increased annually by 1.5%.

Members whose participation began on or after 9/1/2008

Requirement

Monthly retirement allowance with at least 180 months of service at retirement.

Amount

The Retirement System pays \$19.19 per month for each year of earned service for retirees. Upon the retiree's death, the surviving spouse will receive \$12.80 per month for each year of earned. These amounts will be increased annually by 1.5%.



SCHEDULE E

DETAILED TABULATIONS OF THE DATA

**Schedule of Non-Hazardous Retired Members Added to and Removed From Rolls
Last Six Fiscal Years**

Year Ending June 30	2010	2011	2012	2013	2014	2015
	<u>Number</u>					
Beginning of Year	39,756	41,038	43,211	45,304	47,676	49,935
Added	2,565	3,250	3,300	3,570	3,480	6,279
Removed	1,283	1,077	1,207	1,198	1,221	1,304
End of Year	41,038	43,211	45,304	47,676	49,935	52,651
	<u>Annual Allowances*</u>					
Beginning of Year	\$ 440,061,418	\$ 452,613,550	\$ 483,594,068	\$ 515,008,361	\$ 557,979,192	\$ 582,957,825
Added	21,063,111	38,861,094	41,160,717	56,721,012	33,974,542	44,962,364
Removed	8,510,979	7,880,576	9,746,424	13,750,181	8,995,909	10,369,262
End of Year	\$ 452,613,550	\$ 483,594,068	\$ 515,008,361	\$ 557,979,192	\$ 582,957,825	\$ 617,550,928
% Increase in Allowances	2.85%	6.84%	6.50%	8.34%	4.48%	5.93%
Average Annual Allowance	\$ 11,029	\$ 11,191	\$ 11,368	\$ 11,704	\$ 11,674	\$ 11,729

* The annual allowances shown for 2013 and later include allowances for hazardous members who are receiving a portion of benefit from the non-hazardous system.



**Schedule of Hazardous Retired Members Added to and Removed From Rolls
Last Six Fiscal Years**

Year Ending June 30	2010	2011	2012	2013	2014	2015
	<u>Number</u>					
Beginning of Year	5,808	6,068	6,468	6,878	7,293	7,646
Added	423	502	483	519	469	879
Removed	163	102	73	104	116	138
End of Year	6,068	6,468	6,878	7,293	7,646	8,034
	<u>Annual Allowances</u>					
Beginning of Year	\$ 139,886,751	\$ 146,916,812	\$ 160,259,395	\$ 173,221,483	\$ 182,634,895	\$ 191,007,832
Added	8,566,698	14,640,991	14,149,084	10,923,660	9,940,048	13,429,781
Removed	1,536,637	1,298,408	1,186,996	1,510,248	1,567,111	2,284,275
End of Year	\$ 146,916,812	\$ 160,259,395	\$ 173,221,483	\$ 182,634,895	\$ 191,007,832	\$ 202,153,338
% Increase in Allowances	5.03%	9.08%	8.09%	5.43%	4.58%	5.84%
Average Annual Allowance	\$ 24,212	\$ 24,777	\$ 25,185	\$ 25,042	\$ 24,981	\$ 25,162



Non-Hazardous Retired Lives Summary June 30, 2015

	Male Lives		Female Lives		Total	
	Number	Monthly Benefits	Number	Monthly Benefits	Number	Monthly Benefits
Basic Form	4,878	\$ 5,017,677.25	16,960	\$ 12,244,575.46	21,838	\$ 17,262,252.71
Straight Life (Old Plan)	0	0.00	0	0.00	0	0.00
Joint & Survivor						
100% to Beneficiary	2,662	2,975,703.19	1,360	843,226.97	4,022	3,818,930.16
66-2/3% to Beneficiary	735	1,321,760.53	500	535,795.19	1,235	1,857,555.72
50% to Beneficiary	1,051	1,684,603.14	1,410	1,646,873.22	2,461	3,331,476.36
Pop-up Option	3,775	5,893,547.05	3,214	3,427,798.78	6,989	9,321,345.83
10 Years Certain	0	0.00	0	0.00	0	0.00
10 Years Certain & Life	1,309	1,306,768.09	3,084	2,310,575.07	4,393	3,617,343.16
Social Security Option						
Age 62 Basic	250	511,960.73	506	601,445.81	756	1,113,406.54
Age 62 Survivorship	583	1,251,418.13	325	381,853.27	908	1,633,271.40
Partial Deferred (Old Plan)	0	0.00	0	0.00	0	0.00
Widows Age 60	0	0.00	0	0.00	0	0.00
Dependent Child	0	0.00	0	0.00	0	0.00
Refund	0	0.00	0	0.00	0	0.00
15 Years Certain & Life	602	598,384.25	737	551,861.16	1,339	1,150,245.41
20 Years Certain & Life	444	595,860.19	659	510,231.52	1,103	1,106,091.71
5 Years Certain	0	0.00	0	0.00	0	0.00
PLSO 12 Month Basic	104	122,674.64	374	319,095.43	478	441,770.07
PLSO 24 Month Basic	61	43,319.47	253	199,718.44	314	243,037.91
PLSO 36 Month Basic	269	131,663.87	721	326,923.00	990	458,586.87
PLSO 12 Month Survivor	151	186,043.95	97	97,509.94	248	283,553.89
PLSO 24 Month Survivor	93	94,895.66	64	41,785.78	157	136,681.44
PLSO 36 Month Survivor	413	261,071.15	281	128,038.75	694	389,109.90
Total	17,380	\$ 21,997,351.29	30,545	\$ 24,167,307.79	47,925	\$ 46,164,659.08



Hazardous Retired Lives Summary June 30, 2015

	Male Lives		Female Lives		Total	
	Number	Monthly Benefits	Number	Monthly Benefits	Number	Monthly Benefits
Basic Form	977	\$ 1,967,095.18	301	\$ 471,413.04	1,278	\$ 2,438,508.22
Straight Life (Old Plan)	0	0.00	0	0.00	0	0.00
Joint & Survivor						
100% to Beneficiary	728	1,459,399.53	34	41,793.20	762	1,501,192.73
66-2/3% to Beneficiary	286	714,431.10	7	16,775.46	293	731,206.56
50% to Beneficiary	441	1,045,498.06	31	64,219.16	472	1,109,717.22
Pop-up Option	2,768	6,968,633.62	124	239,586.87	2,892	7,208,220.49
10 Years Certain	65	109,736.33	7	7,094.67	72	116,831.00
10 Years Certain & Life	196	408,835.59	54	95,889.59	250	504,725.18
Social Security Option						
Age 62 Basic	105	231,332.42	11	18,327.51	116	249,659.93
Age 62 Survivorship	288	618,169.03	16	41,380.35	304	659,549.38
Partial Deferred (Old Plan)	0	0.00	0	0.00	0	0.00
Widows Age 60	0	0.00	0	0.00	0	0.00
Dependent Child	0	0.00	0	0.00	0	0.00
Refund	0	0.00	0	0.00	0	0.00
15 Years Certain & Life	88	164,301.13	13	18,674.23	101	182,975.36
20 Years Certain & Life	144	285,953.06	26	39,202.15	170	325,155.21
5 Years Certain	0	0.00	0	0.00	0	0.00
PLSO 12 Month Basic	26	45,792.55	9	12,126.97	35	57,919.52
PLSO 24 Month Basic	20	42,744.50	6	6,336.10	26	49,080.60
PLSO 36 Month Basic	55	86,721.56	21	24,078.06	76	110,799.62
PLSO 12 Month Survivor	59	147,864.89	4	8,080.23	63	155,945.12
PLSO 24 Month Survivor	68	110,699.90	2	2,220.11	70	112,920.01
PLSO 36 Month Survivor	140	215,374.81	6	6,248.86	146	221,623.67
Total	6,454	\$ 14,622,583.26	672	\$ 1,113,446.56	7,126	\$ 15,736,029.82



Non-Hazardous Beneficiary Lives Summary June 30, 2015

	Male Lives		Female Lives		Total	
	Number	Monthly Benefits	Number	Monthly Benefits	Number	Monthly Benefits
Basic Form	11	\$ 2,663.45	29	\$ 15,975.00	40	\$ 18,638.45
Straight Life (Old Plan)	0	0.00	0	0.00	0	0.00
Joint & Survivor						
100% to Beneficiary	382	211,488.20	1,559	1,051,933.45	1,941	1,263,421.65
66-2/3% to Beneficiary	51	26,050.43	235	185,877.35	286	211,927.78
50% to Beneficiary	111	41,437.87	365	206,355.62	476	247,793.49
Pop-up Option	169	123,662.74	597	580,405.98	766	704,068.72
10 Years Certain	121	79,322.33	155	121,907.60	276	201,229.93
10 Years Certain & Life	57	41,035.70	66	52,465.33	123	93,501.03
Social Security Option						
Age 62 Basic	0	0.00	4	4,836.06	4	4,836.06
Age 62 Survivorship	24	15,046.70	142	213,312.24	166	228,358.94
Partial Deferred (Old Plan)	0	0.00	0	0.00	0	0.00
Widows Age 60	0	0.00	1	206.92	1	206.92
Dependent Child	0	0.00	0	0.00	0	0.00
Refund	2	1,795.91	5	3,220.69	7	5,016.60
15 Years Certain & Life	36	30,177.72	61	49,587.22	97	79,764.94
20 Years Certain & Life	48	32,035.04	68	67,986.15	116	100,021.19
5 Years Certain	98	69,977.28	103	66,201.82	201	136,179.10
PLSO 12 Month Basic	0	0.00	1	395.49	1	395.49
PLSO 24 Month Basic	0	0.00	0	0.00	0	0.00
PLSO 36 Month Basic	1	149.07	1	152.38	2	301.45
PLSO 12 Month Survivor	7	2,001.60	39	40,058.93	46	42,060.53
PLSO 24 Month Survivor	12	13,559.37	22	20,285.34	34	33,844.71
PLSO 36 Month Survivor	36	18,368.94	107	51,686.30	143	70,055.24
Total	1,166	\$ 708,772.35	3,560	\$ 2,732,849.87	4,726	\$ 3,441,622.22



Hazardous Beneficiary Lives Summary June 30, 2015

	Male Lives		Female Lives		Total	
	Number	Monthly Benefits	Number	Monthly Benefits	Number	Monthly Benefits
Basic Form	12	\$ 5,344.03	35	\$ 29,165.73	47	\$ 34,509.76
Straight Life (Old Plan)	0	0.00	0	0.00	0	0.00
Joint & Survivor						
100% to Beneficiary	17	9,056.18	213	269,539.76	230	278,595.94
66-2/3% to Beneficiary	3	687.67	52	75,076.90	55	75,764.57
50% to Beneficiary	7	4,462.32	61	59,273.71	68	63,736.03
Pop-up Option	30	20,236.46	232	368,500.49	262	388,736.95
10 Years Certain	14	8,785.30	19	16,403.44	33	25,188.74
10 Years Certain & Life	4	1,629.00	3	1,665.29	7	3,294.29
Social Security Option						
Age 62 Basic	0	0.00	1	310.13	1	310.13
Age 62 Survivorship	0	0.00	100	160,392.84	100	160,392.84
Partial Deferred (Old Plan)	0	0.00	0	0.00	0	0.00
Widows Age 60	0	0.00	3	3,287.07	3	3,287.07
Dependent Child	0	0.00	0	0.00	0	0.00
Refund	5	1,437.03	15	8,001.28	20	9,438.31
15 Years Certain & Life	3	1,094.65	2	295.12	5	1,389.77
20 Years Certain & Life	3	1,090.53	12	11,197.02	15	12,287.55
5 Years Certain	2	3,185.15	3	5,130.68	5	8,315.83
PLSO 12 Month Basic	0	0.00	1	2,192.42	1	2,192.42
PLSO 24 Month Basic	0	0.00	1	1,466.49	1	1,466.49
PLSO 36 Month Basic	2	561.73	3	1,618.98	5	2,180.71
PLSO 12 Month Survivor	0	0.00	5	3,581.07	5	3,581.07
PLSO 24 Month Survivor	1	1,294.71	10	8,031.87	11	9,326.58
PLSO 36 Month Survivor	5	2,056.47	29	24,030.26	34	26,086.73
Total	108	\$ 60,921.23	800	\$ 1,049,160.55	908	\$ 1,110,081.78



Non-Hazardous Members

**Retired and Beneficiary Information June 30, 2015
Tabulated by Attained Ages**

Attained Age	Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 45	16	\$ 296,919	55	\$ 571,004	150	\$ 906,582	221	\$ 1,774,505
45-49	251	\$ 6,336,551	129	\$ 1,537,253	52	\$ 502,425	432	\$ 8,376,229
50-54	1,116	\$ 27,612,754	312	\$ 3,939,865	129	\$ 1,499,045	1,557	\$ 33,051,664
55-59	3,762	\$ 69,886,689	618	\$ 7,329,984	260	\$ 2,995,656	4,640	\$ 80,212,329
60-64	7,471	\$ 105,848,619	799	\$ 9,305,546	479	\$ 5,178,530	8,749	\$ 120,332,695
65-69	10,849	\$ 123,187,666	773	\$ 8,520,802	626	\$ 6,855,797	12,248	\$ 138,564,265
70-74	8,426	\$ 81,417,028	533	\$ 5,146,348	676	\$ 6,214,640	9,635	\$ 92,778,016
75-79	6,043	\$ 53,402,968	343	\$ 3,212,277	628	\$ 5,917,623	7,014	\$ 62,532,868
80-84	3,608	\$ 28,168,738	146	\$ 1,186,043	571	\$ 4,678,022	4,325	\$ 34,032,803
85-89	1,802	\$ 12,244,028	24	\$ 155,229	501	\$ 3,442,092	2,327	\$ 15,841,349
90 & Over	841	\$ 4,630,790	8	\$ 38,807	654	\$ 3,109,057	1,503	\$ 7,778,654
Totals	44,185	\$ 513,032,750	3,740	\$ 40,943,158	4,726	\$ 41,299,469	52,651	\$ 595,275,377



Hazardous Members

**Retired and Beneficiary Information June 30, 2015
Tabulated by Attained Ages**

Attained Age	Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 45	104	\$ 3,220,583	67	\$ 1,051,656	173	\$ 952,589	344	\$ 5,224,828
45-49	625	\$ 19,799,736	66	\$ 1,186,656	31	\$ 391,851	722	\$ 21,378,243
50-54	992	\$ 32,241,968	90	\$ 1,619,041	54	\$ 762,410	1,136	\$ 34,623,419
55-59	1,103	\$ 31,480,905	89	\$ 1,485,426	78	\$ 1,103,943	1,270	\$ 34,070,274
60-64	1,396	\$ 39,435,731	101	\$ 1,503,578	103	\$ 1,847,319	1,600	\$ 42,786,628
65-69	1,242	\$ 29,681,588	52	\$ 837,394	125	\$ 2,136,183	1,419	\$ 32,655,165
70-74	657	\$ 14,016,816	18	\$ 223,743	117	\$ 2,426,762	792	\$ 16,667,321
75-79	334	\$ 6,811,601	4	\$ 73,253	106	\$ 1,915,397	444	\$ 8,800,251
80-84	122	\$ 2,811,283	6	\$ 48,656	75	\$ 1,166,923	203	\$ 4,026,862
85-89	50	\$ 1,080,833	0	\$ -	32	\$ 458,914	82	\$ 1,539,747
90 & Over	7	\$ 201,990	1	\$ 19,920	14	\$ 158,693	22	\$ 380,603
Totals	6,632	\$ 180,783,034	494	\$ 8,049,323	908	\$ 13,320,984	8,034	\$ 202,153,341



**Total Non-Hazardous Active Members as of June 30, 2015
Tabulated by Attained Ages and Years of Service**

Attained Age	Years of Service to Valuation Date								Totals
	0-4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 26	27 - 29	30+	
Under 20	98								98
Avg Pay	\$11,967								\$11,967
20-24	2,088	14							2,102
Avg Pay	\$18,730	\$22,153							\$18,753
25-29	3,834	692	15						4,541
Avg Pay	\$22,930	\$32,180	\$27,766						\$24,356
30-34	3,742	1,604	558	23					5,927
Avg Pay	\$22,798	\$32,997	\$36,868	\$42,832					\$26,961
35-39	3,925	1,881	1,339	528	17			1	7,691
Avg Pay	\$22,108	\$31,219	\$37,137	\$41,252	\$48,148			\$18,871	\$28,324
40-44	3,822	2,390	1,802	1,223	352	11	12	1	9,613
Avg Pay	\$22,108	\$28,323	\$33,909	\$42,125	\$47,285	\$46,672	\$69,083	\$89,526	\$29,428
44-49	3,429	2,646	2,411	1,816	790	160	80	27	11,359
Avg Pay	\$22,896	\$27,608	\$30,536	\$36,077	\$45,359	\$47,870	\$55,952	\$61,686	\$29,962
50-54	3,055	2,541	2,820	2,679	1,245	352	209	145	13,046
Avg Pay	\$23,214	\$28,235	\$29,042	\$31,388	\$37,912	\$47,537	\$49,162	\$55,701	\$29,966
55-59	2,544	2,156	2,354	2,609	1,750	382	261	178	12,234
Avg Pay	\$22,637	\$27,135	\$29,929	\$30,294	\$34,687	\$41,587	\$46,518	\$58,828	\$29,817
60-64	1,859	1,675	1,654	1,632	1,299	304	214	156	8,793
Avg Pay	\$21,041	\$27,448	\$30,172	\$31,396	\$32,809	\$38,304	\$39,861	\$55,156	\$29,300
65-69	897	797	716	570	364	106	111	82	3,643
Avg Pay	\$17,397	\$22,645	\$27,360	\$28,696	\$31,011	\$34,002	\$38,026	\$46,585	\$25,400
70 & over	395	446	410	275	135	39	45	60	1,805
Avg Pay	\$14,824	\$19,220	\$22,115	\$24,530	\$26,517	\$33,412	\$33,136	\$36,160	\$21,487
Totals	29,688	16,842	14,079	11,355	5,952	1,354	932	650	80,852
Avg Pay	\$21,974	\$28,371	\$30,993	\$33,225	\$36,742	\$42,351	\$45,025	\$53,717	\$28,406



**Total Hazardous Active Members as of June 30, 2015
Tabulated by Attained Ages and Years of Service**

Attained Age	Years of Service to Valuation Date								Totals
	0-4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 26	27 - 29	30+	
Under 20 Avg Pay									
20-24 Avg Pay	269 \$34,105	1 \$39,726		1 \$73,857					271 \$34,272
25-29 Avg Pay	1,019 \$41,001	239 \$48,275	1 \$46,715						1,259 \$42,386
30-34 Avg Pay	587 \$43,325	779 \$51,350	234 \$54,979	7 \$58,583					1,607 \$48,979
35-39 Avg Pay	262 \$42,018	464 \$50,255	686 \$56,089	262 \$61,881	6 \$59,138				1,680 \$53,198
40-44 Avg Pay	132 \$41,092	283 \$49,799	518 \$55,308	752 \$63,631	158 \$68,667	3 \$57,583	10 \$84,366		1,856 \$58,127
44-49 Avg Pay	105 \$37,950	157 \$48,680	279 \$54,060	415 \$59,763	235 \$70,386	50 \$76,060	28 \$71,698	7 \$88,369	1,276 \$58,372
50-54 Avg Pay	44 \$38,466	95 \$47,896	138 \$51,732	195 \$59,044	140 \$66,743	53 \$75,414	34 \$73,509	17 \$80,570	716 \$58,806
55-59 Avg Pay	25 \$37,915	45 \$48,112	54 \$53,444	73 \$54,542	47 \$60,884	26 \$67,480	14 \$73,718	24 \$84,122	308 \$57,297
60-64 Avg Pay	10 \$39,878	28 \$40,651	46 \$48,349	28 \$58,806	21 \$66,683	6 \$65,162	3 \$81,379	12 \$83,284	154 \$54,821
65-69 Avg Pay	3 \$25,129	6 \$39,372	8 \$50,482	6 \$57,892	3 \$59,391	1 \$58,432	2 \$51,264		29 \$48,344
70 & over Avg Pay	1 \$42,795	3 \$32,915	3 \$36,522	4 \$76,733	1 \$9,473			4 \$94,407	16 \$59,071
Totals Avg Pay	2,457 \$40,684	2,100 \$49,915	1,967 \$54,847	1,743 \$61,472	611 \$67,985	139 \$73,213	91 \$73,948	64 \$84,129	9,172 \$52,730



SCHEDULE F

SENSITIVITY ANALYSIS

The valuation results are projections based on the actuarial assumptions. Actual experience will differ from these assumptions, either increasing or decreasing cost. The charts on the following pages provide a simple analysis on how the costs are sensitive to changes to the assumed discount rate, the assumed inflation rate and the rate of payroll growth. The charts show the actuarial accrued liability, the unfunded liability, the funded ratio and the employer contribution rate under the following scenarios:

- The discount rate assumption sensitivity analysis shows the valuation results with the baseline discount rate assumption, 7.50%, together with a decrease in the discount rate to 6.50% and an increase in the discount rate to 8.50%. Under this scenario, the underlying inflation rate assumption is held constant at 3.25% and the payroll growth assumption is held constant at 4.00%.
- The inflation assumption sensitivity analysis shows the valuation results with the baseline underlying inflation rate assumption, 3.25%, together with decreases in the inflation rate to 3.00% and 2.75%. Under this scenario, the decrease in the underlying inflation rate assumption leads to corresponding decreases in the discount rate, the payroll growth assumption and the healthcare trend assumption for members hired before 7/1/2003.
- The payroll growth assumption sensitivity analysis shows the valuation results with the baseline underlying payroll growth assumption, 4.00%, together with decreases in the payroll growth assumption to 2.00% and 0.00%. Under this scenario, all other assumptions, including the individual member salary scale, are held constant so that the only impact is in the amortization of the unfunded liability, leading to higher employer contribution rates.



**NON-HAZARDOUS
ASSUMED DISCOUNT RATE SENSITIVITY ANALYSIS**

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
Retirement			
Actuarial Accrued Liability	\$ 11,929,678,254	\$ 10,740,325,421	\$ 9,721,750,033
Actuarial Value of Assets	<u>6,474,848,513</u>	<u>6,474,848,513</u>	<u>6,474,848,513</u>
Unfunded Liability	\$ 5,454,829,741	\$ 4,265,476,908	\$ 3,246,901,520
Funded Ratio	54.28%	60.29%	66.60%
Contribution Rate	17.27%	13.95%	10.96%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%
Insurance			
Actuarial Accrued Liability	\$ 3,287,498,478	\$ 2,907,827,440	\$ 2,591,881,484
Actuarial Value of Assets	<u>1,997,456,463</u>	<u>1,997,456,463</u>	<u>1,997,456,463</u>
Unfunded Liability	\$ 1,290,042,015	\$ 910,370,977	\$ 594,425,021
Funded Ratio	60.76%	68.69%	77.07%
Contribution Rate	6.32%	4.93%	3.71%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%
CERS Non-Hazardous Total			
Actuarial Accrued Liability	\$ 15,217,176,732	\$ 13,648,152,861	\$ 12,313,631,517
Actuarial Value of Assets	<u>8,472,304,976</u>	<u>8,472,304,976</u>	<u>8,472,304,976</u>
Unfunded Liability	\$ 6,744,871,756	\$ 5,175,847,885	\$ 3,841,326,541
Funded Ratio	55.68%	62.08%	68.80%
Contribution Rate	23.59%	18.88%	14.67%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%



**NON-HAZARDOUS
INFLATION ASSUMPTION SENSITIVITY ANALYSIS**

	Valuation Results	Decrease Inflation Rate 25 basis points	Decrease Inflation Rate 50 basis points
Retirement			
Actuarial Accrued Liability	\$ 10,740,325,421	\$ 10,984,865,610	\$ 11,239,814,857
Actuarial Value of Assets	<u>6,474,848,513</u>	<u>6,474,848,513</u>	<u>6,474,848,513</u>
Unfunded Liability	\$ 4,265,476,908	\$ 4,510,017,097	\$ 4,764,966,344
Funded Ratio	60.29%	58.94%	57.61%
Contribution Rate	13.95%	14.81%	15.70%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%
Insurance			
Actuarial Accrued Liability	\$ 2,907,827,440	\$ 2,920,220,659	\$ 2,933,386,922
Actuarial Value of Assets	<u>1,997,456,463</u>	<u>1,997,456,463</u>	<u>1,997,456,463</u>
Unfunded Liability	\$ 910,370,977	\$ 922,764,196	\$ 935,930,459
Funded Ratio	68.69%	68.40%	68.09%
Contribution Rate	4.93%	5.01%	5.10%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%
CERS Non-Hazardous Total			
Actuarial Accrued Liability	\$ 13,648,152,861	\$ 13,905,086,269	\$ 14,173,201,779
Actuarial Value of Assets	<u>8,472,304,976</u>	<u>8,472,304,976</u>	<u>8,472,304,976</u>
Unfunded Liability	\$ 5,175,847,885	\$ 5,432,781,293	\$ 5,700,896,803
Funded Ratio	62.08%	60.93%	59.78%
Contribution Rate	18.88%	19.82%	20.80%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%



**NON-HAZARDOUS
PAYROLL GROWTH SENSITIVITY ANALYSIS**

	Valuation Results	Decrease Payroll Growth 2%	No Payroll Growth
Retirement			
Actuarial Accrued Liability	\$ 10,740,325,421	\$ 10,740,325,421	\$ 10,740,325,421
Actuarial Value of Assets	<u>6,474,848,513</u>	<u>6,474,848,513</u>	<u>6,474,848,513</u>
Unfunded Liability	\$ 4,265,476,908	\$ 4,265,476,908	\$ 4,265,476,908
Funded Ratio	60.29%	60.29%	60.29%
Contribution Rate	13.95%	16.56%	19.55%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%
Insurance			
Actuarial Accrued Liability	\$ 2,907,827,440	\$ 2,907,827,440	\$ 2,907,827,440
Actuarial Value of Assets	<u>1,997,456,463</u>	<u>1,997,456,463</u>	<u>1,997,456,463</u>
Unfunded Liability	\$ 910,370,977	\$ 910,370,977	\$ 910,370,977
Funded Ratio	68.69%	68.69%	68.69%
Contribution Rate	4.93%	5.42%	5.98%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%
CERS Non-Hazardous Total			
Actuarial Accrued Liability	\$ 13,648,152,861	\$ 13,648,152,861	\$ 13,648,152,861
Actuarial Value of Assets	<u>8,472,304,976</u>	<u>8,472,304,976</u>	<u>8,472,304,976</u>
Unfunded Liability	\$ 22,120,457,837	\$ 22,120,457,837	\$ 22,120,457,837
Funded Ratio	62.08%	62.08%	62.08%
Contribution Rate	18.88%	21.98%	25.53%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%



**HAZARDOUS
ASSUMED DISCOUNT RATE SENSITIVITY ANALYSIS**

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
Retirement			
Actuarial Accrued Liability	\$ 4,043,189,647	\$ 3,613,307,547	\$ 3,257,142,471
Actuarial Value of Assets	<u>2,096,782,956</u>	<u>2,096,782,956</u>	<u>2,096,782,956</u>
Unfunded Liability	\$ 1,946,406,691	\$ 1,516,524,591	\$ 1,160,359,515
Funded Ratio	51.86%	58.03%	64.37%
Contribution Rate	27.30%	21.71%	17.08%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%
Insurance			
Actuarial Accrued Liability	\$ 1,710,792,726	\$ 1,504,015,233	\$ 1,335,341,579
Actuarial Value of Assets	<u>1,087,707,118</u>	<u>1,087,707,118</u>	<u>1,087,707,118</u>
Unfunded Liability	\$ 623,085,608	\$ 416,308,115	\$ 247,634,461
Funded Ratio	63.58%	72.32%	81.46%
Contribution Rate	12.93%	9.79%	7.05%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%
CERS Hazardous Total			
Actuarial Accrued Liability	\$ 5,753,982,373	\$ 5,117,322,780	\$ 4,592,484,050
Actuarial Value of Assets	<u>3,184,490,074</u>	<u>3,184,490,074</u>	<u>3,184,490,074</u>
Unfunded Liability	\$ 2,569,492,299	\$ 1,932,832,706	\$ 1,407,993,976
Funded Ratio	55.34%	62.23%	69.34%
Contribution Rate	40.23%	31.50%	24.13%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%



**HAZARDOUS
INFLATION ASSUMPTION SENSITIVITY ANALYSIS**

	Valuation Results	Decrease Inflation Rate 25 basis points	Decrease Inflation Rate 50 basis points
Retirement			
Actuarial Accrued Liability	\$ 3,613,307,547	\$ 3,703,081,612	\$ 3,797,000,893
Actuarial Value of Assets	<u>2,096,782,956</u>	<u>2,096,782,956</u>	<u>2,096,782,956</u>
Unfunded Liability	\$ 1,516,524,591	\$ 1,606,298,656	\$ 1,700,217,937
Funded Ratio	58.03%	56.62%	55.22%
Contribution Rate	21.71%	23.15%	24.69%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%
Insurance			
Actuarial Accrued Liability	\$ 1,504,015,233	\$ 1,507,652,574	\$ 1,511,507,628
Actuarial Value of Assets	<u>1,087,707,118</u>	<u>1,087,707,118</u>	<u>1,087,707,118</u>
Unfunded Liability	\$ 416,308,115	\$ 419,945,456	\$ 423,800,510
Funded Ratio	72.32%	72.15%	71.96%
Contribution Rate	9.79%	9.89%	10.02%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%
CERS Hazardous Total			
Actuarial Accrued Liability	\$ 5,117,322,780	\$ 5,210,734,186	\$ 5,308,508,521
Actuarial Value of Assets	<u>3,184,490,074</u>	<u>3,184,490,074</u>	<u>3,184,490,074</u>
Unfunded Liability	\$ 1,932,832,706	\$ 2,026,244,112	\$ 2,124,018,447
Funded Ratio	62.23%	61.11%	59.99%
Contribution Rate	31.50%	33.04%	34.71%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%



**HAZARDOUS
PAYROLL GROWTH ASSUMPTION SENSITIVITY ANALYSIS**

	Valuation Results	Decrease Payroll Growth 2%	No Payroll Growth
Retirement			
Actuarial Accrued Liability	\$ 3,613,307,547	\$ 3,613,307,547	\$ 3,613,307,547
Actuarial Value of Assets	<u>2,096,782,956</u>	<u>2,096,782,956</u>	<u>2,096,782,956</u>
Unfunded Liability	\$ 1,516,524,591	\$ 1,516,524,591	\$ 1,516,524,591
Funded Ratio	58.03%	58.03%	58.03%
Contribution Rate	21.71%	26.12%	31.18%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%
Insurance			
Actuarial Accrued Liability	\$ 1,504,015,233	\$ 1,504,015,233	\$ 1,504,015,233
Actuarial Value of Assets	<u>1,087,707,118</u>	<u>1,087,707,118</u>	<u>1,087,707,118</u>
Unfunded Liability	\$ 416,308,115	\$ 416,308,115	\$ 416,308,115
Funded Ratio	72.32%	72.32%	72.32%
Contribution Rate	9.79%	10.87%	12.07%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%
CERS Hazardous Total			
Actuarial Accrued Liability	\$ 5,117,322,780	\$ 5,117,322,780	\$ 5,117,322,780
Actuarial Value of Assets	<u>3,184,490,074</u>	<u>3,184,490,074</u>	<u>3,184,490,074</u>
Unfunded Liability	\$ 1,932,832,706	\$ 1,932,832,706	\$ 1,932,832,706
Funded Ratio	62.23%	62.23%	62.23%
Contribution Rate	31.50%	36.99%	43.25%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%



Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

November 12, 2015

Mr. William A. Thielen
Executive Director
Kentucky Retirement Systems
Perimeter Park West
1260 Louisville Road
Frankfort, Kentucky 40601

Subject: CERS Contribution Rates

Dear Mr. Thielen:

As you will recall, in 2008 the Legislature mandated an extension of the phase-in of insurance contribution rates that had been approved by the Board from five to ten years to mitigate the impact of the application of Governmental Accounting Standards Board Statements 43 and 45 for CERS employer contribution rates for health insurance.

The table below provides the recommended contribution rates over the next two years to continue the ten year phase-in begun in July 2007. These may be compared to the rates shown in the June 30, 2015 report of 4.93% of payroll for non-hazardous members and 9.79% for hazardous members.

Ten Year Phase-In
Remaining Period

Fiscal Year Ending June 30	Non-Hazardous Members	Hazardous Members
2017	4.73%	9.35%
2018 and later	4.94%	9.81%

As was noted last year, it is important to remember that the pension contribution rates are not part of the phase-in alternatives.

We look forward to discussing these results with the Board at the December 3rd meeting.

Sincerely,

Alisa Bennett, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144
Phone (678) 388-1700 • Fax (678) 388-1730
www.CavMacConsulting.com
Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE



Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve



Report on the Annual Valuation of the State Police Retirement System

Prepared as of June 30, 2015





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

November 10, 2015

Board of Trustees
Kentucky Retirement Systems
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Dear Members of the Board:

Presented in this report are the results of the annual actuarial valuation of the retirement and insurance benefits provided under the State Police Retirement System (SPRS). The purpose of the valuation was to measure the System's funding progress and to determine the required employer contribution rates for the fiscal years beginning July 1, 2016 and July 1, 2017. The date of the valuation was June 30, 2015.

The valuation was based upon data, furnished by the Executive Director and the Kentucky Retirement Systems (KRS) staff, concerning active, inactive and retired members along with pertinent financial information. The complete cooperation of the KRS staff in furnishing materials requested is hereby acknowledged with appreciation.

Since the previous valuation, the revised assumptions from the economic and demographic experience investigation covering the five-year period from July 1, 2008 to June 30, 2013 have been reflected in this valuation.

To the best of our knowledge, this report is complete and accurate. The valuation was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The valuation was prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144

Phone (678) 388-1700 • Fax (678) 388-1730

www.CavMacConsulting.com

Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE



The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the system, and on actuarial assumptions that are, in the aggregate, internally consistent and reasonably based on the actual experience of the system.

Respectfully submitted,

A handwritten signature in blue ink that reads 'Todd B. Green'.

Todd B. Green ASA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink that reads 'Alisa Bennett'.

Alisa Bennett, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

TBG/AB:kc



TABLE OF CONTENTS

<u>Section</u>	<u>Item</u>	<u>Page No.</u>
I	Summary of Principal Results	1
II	Membership Data	5
III	Assets	6
IV	Comments on Valuation	7
V	Derivation of Experience Gains and Losses	9
VI	Actuarially Determined Contribution Rates	12
VII	Accounting Information	14
<u>Schedule</u>		
A	Valuation Balance Sheet and Solvency Test	18
B	Development of Actuarial Value of Assets	21
C	Statement of Actuarial Assumptions and Methods	23
D	Summary of Main Benefit and Contribution Provisions	30
E	Detailed Tabulations of the Data	37
F	Sensitivity Analysis	42



**REPORT ON THE ANNUAL VALUATION OF THE
STATE POLICE RETIREMENT SYSTEM**

PREPARED AS OF JUNE 30, 2015

SECTION I – SUMMARY OF PRINCIPAL RESULTS

This report, prepared as of June 30, 2015, presents the results of the annual actuarial valuation of the retirement and insurance benefits provided under the System. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized in the following table.

SUMMARY OF PRINCIPAL RESULTS

	6/30/2015	6/30/2014
Contributions for next fiscal year:		
Retirement	66.47%	58.44%
Insurance	<u>18.87</u>	<u>19.17</u>
Total	85.34%	77.61%
Funded status as of valuation date:		
Retirement		
Actuarial accrued liability	\$734,156,446	\$681,118,402
Actuarial value of assets	248,387,946	242,741,735
Unfunded liability on actuarial value of assets	485,768,500	438,376,667
Funded ratio on actuarial value of assets	33.83%	35.64%
Market value of assets	\$246,968,144	\$260,763,486
Unfunded liability on market value of assets	487,188,302	420,354,916
Funded ratio on market value of assets	33.64%	38.28%
Insurance		
Actuarial accrued liability	\$254,838,710	\$234,271,127
Actuarial value of assets	167,774,940	155,594,760
Unfunded liability on actuarial value of assets	87,063,770	78,676,367
Funded ratio on actuarial value of assets	65.84%	66.42%
Market value of assets	\$165,018,209	\$165,167,805
Unfunded liability on market value of assets	89,820,501	69,103,322
Funded ratio on market value of assets	64.75%	70.50%
Demographic data as of valuation date:		
Number of retired participants and beneficiaries	1,460	1,413
Number of vested former members	63	59
Number of former members due a refund	362	349
Number of active members	937	855
Total salary	\$45,764,515	\$44,615,885
Average salary	\$48,842	\$52,182



The State Police Retirement System is a defined benefit pension fund that provides pensions and health care coverage for uniformed state police officers. This report presents the results of the June 30, 2015 actuarial funding valuation for both the Retirement Plan and the Insurance Fund. The primary purpose of performing the actuarial funding valuations are to:

- Calculate the actuarially determined contribution rates for the fiscal years beginning July 1, 2016 and July 1, 2017 for both the Retirement Plan and the Insurance Fund.
- Determine the experience of the System since the last valuation date.
- Disclose asset and liability measures as of the valuation date.
- Analyze and report on trends in contributions, assets, and liabilities over the past several years.

Since the previous valuation there were no changes to the plan provisions, however the actuarial methods and assumptions were updated to reflect an experience study performed over the five-year period ending June 30, 2013 dated April 30, 2014. This experience study was adopted by the Board on December 4, 2014. The experience study reviewed the actuarial assumptions and methods used in the actuarial valuation process of both the Retirement Plan and Insurance Fund. For the Retirement Plan the assumptions fall into three categories. The first are economic assumptions which include price inflation, wage inflation and investment return. The second category includes demographic assumptions which includes assumed rates of mortality, service retirement, disability retirement, withdrawal and salary increases for merits and promotions. For the Insurance Fund the assumptions fall into three categories. The first two, economic assumptions and demographic assumptions are the same as those used for the Retirement Plan. The third category includes other post-employment benefit assumptions.

As a result of the experience the following assumptions were updated:

Summary of Assumptions Changes	
Economic Assumptions	
Salary	Composed of Inflation component, Real Rate of Salary Increase component and Merit/Promotion Scale
Inflation	Reduction to annual assumed rate of inflation assumption from 3.50% to 3.25%.
Wage Inflation	Reduction to annual assumed rate from real salary increase assumption from 1.00% to 0.75%
Investment Rate of Return	Composed of Inflation component (3.25% from above) and Real Rate of Return component. Reduction from 7.75% to 7.50% net investment return assumption.
Payroll Growth	Reduce from 4.50% to 4.00%.



Summary of Assumptions Changes	
Demographic Assumptions	
Withdrawal	Increase rates of withdrawal
Retirement	Adjusted rates of retirement
Base Mortality	Healthy Retirees – RP-2000 Mortality Tables Set back one year for females. Disabled Retirees – RP-2000 Combined Disabled Mortality Tables for disabled annuitants set back four years for males. Actives – 50% of the RP-2000 Combined Mortality for males, 30% of the RP-2000 Combined Mortality for females.
Mortality Projection	Healthy Retiree and Beneficiary – Mortality rates are projected to 2013 using improvement Scale BB Disable Retirees – Mortality rates are projected to 2013 using improvement Scale BB Active Members – Mortality rates are projected to 2013 using improvement Scale BB

The actuarial valuation results provide “snapshot” view the System’s financial condition on June 30, 2015. Actuarial gains and losses result when actuarial experience of the plan (such as asset return, pay increases, turnover, deaths, etc.) is different from the expected by the actuarial assumptions. The Retirement Plan’s Unfunded Actuarial Accrued Liability (UAAL) was expected to be \$440.8 million taking into account contributions from both the employer and members of \$37.8 million. The actual UAAL was \$485.8 million. The increase of \$45 million was due to the change in actuarial assumptions and methods and an actuarial loss due to actual experience different than what was anticipated by the assumptions. The Insurance Funds UAAL was expected to be \$80.5 million taking into account expected employer and member contributions of \$8.5 million. The actual UAAL was \$87.1 million. The increase in the UAAL of \$6.6 million was due to the change in actuarial assumptions and methods offset by an actuarial gain due to actuarial experience different than what was anticipated by the assumptions.

The remaining amortization period of the UAAL of both the Pension and Insurance Funds is 28-years as of June 30, 2015. Detailed analysis of the gains and losses are presented in Section V of the report.

As of June 30, 2015 the Pension and Insurance Funds had net assets of \$246,968,144 and \$165,018,209 respectively. The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the actuarially determined contribution. The asset valuation method which recognizes the annual unexpected portion of market value investment returns over a five-year period, attempts to dampen the effect of market volatility. The resulting amount is called the “actuarial value of assets” and is utilized to determine the actuarial valuation results. In this year’s actuarial valuation, the actuarial value of assets as of June 30, 2015 was \$248,387,946 and \$167,774,940 respectively for the Pension and Insurance Funds.



On a market basis, the estimated rate of return was 1.36% and 1.78% respectively for the Pension and Insurance Funds, assuming all cash flows occur in the middle of the year. Due to better than assumed prior returns on the market value of assets the net rate of return measured on the actuarial value of assets was 9.76% and 9.90% respectively for both the Pension and Insurance Funds. Please see Section III and Schedule B of this report for more detailed information on the market and actuarial value of assets.

Schedule F provides sensitivity analysis for three different sets of economic assumptions; the discount rate assumption, the inflation assumption, and the payroll growth assumption. Two assumption change scenarios are presented for each economic assumption. The results of the economic assumption change scenarios are presented along with the valuation results for comparison.

The long-term financial health of this retirement System, like all retirement systems, is heavily dependent on two key items: (1) future investment returns and (2) contributions to the System. The System has recently been strengthened due to two reasons. They are: recent legislative action that provides 100% funding of the actuarially determined contribution and the elimination of unfunded ad hoc cost-of-living adjustments for retirees. The cost for providing cost-of-living adjustments for retirees must be prefunded in advance.



SECTION II – MEMBERSHIP DATA

Data regarding the membership of the System for use as a basis for the valuation were furnished by the System's office. The following tables summarize the membership of the system as of June 30, 2015 upon which the valuation was based. Detailed tabulations of the data are given in Schedule E.

Active Members

Number	Payroll	Group Averages		
		Salary	Age	Service
937	\$45,764,515	\$48,842	36.8	9.8

The following table shows a six-year history of active member valuation data.

SCHEDULE OF SPRS ACTIVE MEMBER VALUATION DATA

Valuation Date	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
6/30/2010	961	\$51,506,712	\$53,597	(1.9)%
6/30/2011	965	48,692,616	50,459	(5.9)
6/30/2012	907	48,372,506	53,332	5.7
6/30/2013	902	45,256,202	50,173	(5.9)
6/30/2014	855	44,615,885	52,182	4.0
6/30/2015	937	45,764,515	48,842	(6.4)

The following table shows the number and annual retirement allowances payable to retired members and their beneficiaries on the roll of the Retirement System as of the valuation date as well as certain group averages.

Retired Lives

Type of Benefit Payment	Number	Annual Benefits	Group Averages	
			Benefit	Age
Retiree	1,222	\$49,027,447	\$40,121	61.9
Disability	52	\$934,883	17,979	57.6
Beneficiary	186	4,968,091	26,710	64.8
Total in SPRS	1,460	\$54,930,421	\$37,624	62.1

This valuation also includes 425 inactive members of which 63 are vested.



SECTION III - ASSETS

1. As of June 30, 2015 the total market value of assets amounted to \$411,986,353 as shown in the following table. The Insurance assets include both the amount in the health care trust and the amount in the 401(h) account in the pension trust established to meet the requirements of HB1.

Retirement	Insurance	SPRS Total
\$246,968,144	\$165,018,209	\$411,986,353

2. The five-year smoothed market related actuarial value of assets used for the current valuation was \$416,162,886. Schedule B shows the development of the actuarial value of assets as of June 30, 2015. The following table shows the actuarial value of assets.

COMPARISON OF ACTUARIAL VALUE OF ASSETS

	JUNE 30, 2015	JUNE 30, 2014
Retirement	\$ 248,387,946	\$ 242,741,735
Insurance	<u>167,774,940</u>	<u>155,594,760</u>
Total	\$ 416,162,886	\$ 398,336,495



SECTION IV - COMMENTS ON VALUATION

Schedule A of this report contains the valuation balance sheets which show the present and prospective assets and liabilities of the System as of June 30, 2015. Separate balance sheets are shown for Retirement and Insurance. Since the previous valuation, the revised assumptions from the economic and demographic experience investigation covering the five-year period from July 1, 2008 to June 30, 2013 have been reflected in this valuation.

Retirement

1. The total valuation balance sheet on account of retirement benefits shows that the System has total prospective retirement benefit liabilities of \$798,031,279, of which \$601,295,055 is for the prospective benefits payable on account of present retired members and beneficiaries of deceased members, \$4,559,850 is for the prospective benefits payable on account of inactive members, \$192,176,374 is for the prospective benefits payable on account of present active members. Against these retirement benefit liabilities the System has a total present actuarial value of assets of \$248,387,946 as of June 30, 2015. The difference of \$549,643,333 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of retirement benefits. Of this amount, \$32,949,643 is the present value of future contributions expected to be made by members, and the balance of \$516,693,690 represents the present value of future contributions payable by the State.
2. The State's contributions to the System on account of retirement benefits consist of normal contributions, accrued liability contributions and contributions for administrative expenses. The valuation indicates that employer normal contributions at the rate of 8.35% of payroll are required to fund the continuing benefit accruals for the average active member of SPRS.
3. Prospective employer normal contributions on account of retirement benefits at the above rates have a present value of \$30,925,190. When this amount is subtracted from \$516,693,690, which is the present value of the total future contributions to be made by the State, there remains \$485,768,500 as the amount of future accrued liability contributions.
4. It is recommended that the accrued liability contribution rate payable by the State on account of retirement benefits be set at 57.70% of payroll. This rate is sufficient to liquidate the unfunded accrued liability of \$485,768,500 over 28 years on the assumption that the aggregate payroll for members will increase by 4.00% each year.
5. The contribution rate for administrative expenses is determined to be 0.42% of payroll.



Insurance

1. The total valuation balance sheet on account of insurance benefits shows that the System has total prospective insurance benefit liabilities of \$280,995,978, of which \$165,675,982 is for the prospective benefits payable on account of present retired members and beneficiaries of deceased members, \$4,771,225 is for the prospective benefits payable on account of inactive members, and \$110,548,771 is for the prospective benefits payable on account of present active members. Against these insurance benefit liabilities the System has a total present actuarial value of assets of \$167,774,940 as of June 30, 2015. The difference of \$113,221,038 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of insurance benefits. Of this amount, \$1,558,766 is the present value of future contributions expected to be made by members, and the balance of \$111,662,272 represents the present value of future contributions payable by the State.
2. The State's contributions to the System on account of insurance benefits consist of normal contributions and accrued liability contributions. The valuation indicates that employer normal contributions at the rate of 8.48% of payroll are required to fund the continuing benefit accruals for the average active member of SPRS.
3. Prospective employer normal contributions on account of insurance benefits at the above rates have a present value of \$24,598,502. When this amount is subtracted from \$111,662,272, which is the present value of the total future contributions to be made by the employers, there remains \$87,063,770 as the amount of future accrued liability contributions.
4. It is recommended that the accrued liability contribution rate payable by the State on account of insurance benefits be set at 10.25% of payroll. This rate is sufficient to liquidate the unfunded accrued liability of \$87,063,770 over 28 years on the assumption that the aggregate payroll for members will increase by 4.00% each year.
5. The contribution rate for administrative expenses is determined to be 0.14% of payroll.



SECTION V – DERIVATION OF EXPERIENCE GAINS AND LOSSES

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain (loss) for the year ended June 30, 2015 is shown below (\$ millions).

**Experience Gain/(Loss)
Retirement Benefits**

		Amount	
(1)	UAAL* as of 6/30/14	\$	438.4
(2)	Normal cost from last valuation		7.1
(3)	Contributions		37.8
(4)	Interest accrual: [(1) + (2)] x .0775 - (3) x .03875		33.1
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$	440.8
(6)	Change due to Actuarial Audit		0.0
(7)	Change due to new actuarial assumption or methods		(40.2)
(8)	Expected UAAL after changes: (5) - (6) - (7)	\$	481.0
(9)	Actual UAAL as of 6/30/15	\$	485.8
(10)	Gain/(loss): (8) - (9)	\$	(4.8)
(11)	Accrued liabilities as of 6/30/14	\$	681.1
(12)	Gain/(loss) as percent of actuarial accrued liabilities at start of year		(0.7)%

**Unfunded actuarial accrued liability*



**Experience Gain/(Loss)
Insurance Benefits**

		Amount	
(1)	UAAL* as of 6/30/14	\$	78.7
(2)	Normal cost from last valuation		4.5
(3)	Expected contributions		<u>8.5</u>
(4)	Interest accrual: [(1) + (2) - (3)] x .0775		5.8
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$	80.5
(6)	Change due to Actuarial Audit		(0.1)
(7)	Change due to new actuarial assumption or methods		(8.5)
(8)	Expected UAAL after changes: (5) - (6) - (7)	\$	89.1
(9)	Actual UAAL as of 6/30/15	\$	87.1
(10)	Gain/(loss): (8) - (9)	\$	2.0
(11)	Accrued liabilities as of 6/30/14	\$	234.3
(12)	Gain/(loss) as percent of actuarial accrued liabilities at start of year		0.9%

* *Unfunded Actuarial Accrued Liability*



**SPRS MEMBERS
ANALYSIS OF FINANCIAL EXPERIENCE**
**Gains & Losses in Accrued Liabilities
Resulting from Difference Between
Assumed Experience & Actual Experience
(\$ Millions)**

Type of Activity	Retirement \$ Gain (or Loss) For Year Ending 6/30/15	Insurance \$ Gain (or Loss) For Year Ending 6/30/15
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (6.5)	\$ (13.0)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	0.0	0.1
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	0.0	(0.1)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	(0.7)	(0.2)
Pay or Claims Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss. For insurance, smaller claims increases than assumed creates a gain; larger, a loss.	2.2	12.1
New Members. Additional unfunded accrued liability will produce a loss.	(0.4)	(0.1)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	5.2	3.3
Death or Waiver After Retirement. If retired members live longer than assumed, there is a loss. If not as long, a gain. If retired members receiving health benefits later waive coverage, there is a gain.	(1.7)	1.5
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, insurance election changes, etc.	<u>(2.9)</u>	<u>(1.6)</u>
Gain (or Loss) During Year From Financial Experience	\$ (4.8)	\$ 2.0
Non-Recurring Items. Adjustments for plan amendments, assumption changes, method changes and data corrections	<u>(40.2)</u>	<u>(8.6)</u>
Composite Gain (or Loss) During Year	\$ (45.0)	\$ (6.6)



SECTION VI – ACTUARIALLY DETERMINED CONTRIBUTION RATES

The valuation balance sheet gives the basis for determining the percentage rates for contributions to be made by the State to the Retirement System. The following tables show the rates of contribution payable by employers as determined from the present valuation. This rate is for informational purposes only.

Actuarially Determined Contribution Rates

Retirement

Contribution Rate for	% of Payroll
A. Normal Cost:	
(1) Service retirement benefits	15.07%
(2) Disability benefits	0.52
(3) Survivor benefits	0.13
(4) Total	<u>16.35%</u>
B. Member Contributions	8.00%
C. Employer Normal Cost: [A(4) - B]	8.35%
D. Administrative Expenses	0.42%
E. Unfunded Actuarial Accrued Liability Contributions:	
(1) UAAL Contribution Rate as of 6/30/14 Valuation:	50.05%
(2) Change due to:	
a. Active decrements	0.86%
b. Pay increases	(0.26)%
c. Retiree mortality	0.20%
d. Investment return	(0.61)%
e. Assumption Changes	4.77%
f. Payroll Growth Assumption	2.23%
g. Other	0.46%
h. Total Change	<u>7.65%</u>
(3) UAAL Contribution Rate as of 6/30/15 Valuation: [E(1) +E(2)h]	57.70%
F. Total Recommended Employer Contribution Rate: [C+D+E(3)]	66.47%

* Based on 28 year amortization of the UAAL from June 30, 2015



Actuarially Determined Contribution Rates

Insurance

Contribution Rate for	% of Payroll
A. Normal Cost	8.72%
B. Member Contributions*	0.24%
C. Employer Normal Cost: [A - B]	8.48%
D. Administrative Expenses	0.14%
E. Unfunded Actuarial Accrued Liability**	10.25%
F. Total Recommended Employer Contribution Rate: [C+D+E]	18.87%

*The liabilities are net of retiree contributions toward their healthcare.

** Based on 28 year amortization of the UAAL from June 30, 2015



SECTION VII - ACCOUNTING INFORMATION

Governmental Accounting Standards Board Statements (GASB) 43, 45, 67 and 68 set forth certain items of required supplementary information to be disclosed in the financial statements of the System and the employer. The information required under GASB 67 and 68 will be issued in separate reports. We are providing the retirement benefit information for informational purposes only. One such item is a distribution of the number of employees by type of membership, as follows:

**NUMBER OF ACTIVE AND RETIRED MEMBERS
AS OF JUNE 30, 2015**

GROUP	NUMBER
Retirees and beneficiaries currently receiving benefits	1,460
Terminated employees entitled to benefits but not yet receiving benefits	425
Active Members	<u>937</u>
Total	2,822

Another such item is the Schedule of Funding Progress for retirement and insurance benefits separately as shown in the following tables.



**RETIREMENT BENEFITS
SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / (c))
6/30/2010	\$ 304,577,292	\$ 612,444,806	\$ 307,867,514	49.7%	\$ 51,506,712	597.7%
6/30/2011	285,580,631	634,379,401	348,798,770	45.0	48,692,616	716.3
6/30/2012	259,791,575	647,688,665	387,897,090	40.1	48,372,506	801.9
6/30/2013	241,800,328	651,580,654	409,780,326	37.1	45,256,202	905.5
6/30/2014	242,741,735	681,118,402	438,376,667	35.6	44,615,885	982.6
6/30/2015*	248,387,946	734,156,446	485,768,500	33.8	45,764,515	1,061.5

* Discount rate changed from 7.75% to 7.50%

**INSURANCE BENEFITS
SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / (c))
6/30/2010	\$ 121,175,083	\$ 434,960,495	\$ 313,785,412	27.9%	\$ 51,506,712	609.2%
6/30/2011	123,687,289	438,427,763	314,740,474	28.2	48,692,616	646.4
6/30/2012	124,372,072	333,903,782	209,531,710	37.2	48,372,506	433.2
6/30/2013*	136,321,060	222,326,743	86,005,683	61.3	45,256,202	190.0
6/30/2014	155,594,760	234,271,127	78,676,367	66.4	44,615,885	176.3
6/30/2015**	167,774,940	254,838,710	87,063,770	65.8	45,764,515	190.2

* Discount rate changed from 4.50% to 7.75%

** Discount rate changed from 7.75% to 7.50%



**INSURANCE BENEFITS
SCHEDULE OF EMPLOYER CONTRIBUTIONS**

Year Ended	Annual Required Contribution	Retiree Drug Subsidy (RDS) Contribution	Employer Contributions	Total Contributions	Percentage Contributed
June 30, 2010	\$30,302,151	\$273,684	\$ 8,369,428	\$ 8,643,112	28.5%
June 30, 2011	25,772,574	0	11,050,964	11,050,964	42.9
June 30, 2012	28,246,786	0	11,960,468	11,960,468	42.3
June 30, 2013	27,234,229	0	16,828,681	16,828,681	61.8
June 30, 2014	20,879,022	0	14,493,242	14,493,242	69.4
June 30, 2015	9,889,797	0	10,381,881	10,381,881	105.0



The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2015. Additional information as of the latest actuarial valuation follows.

Insurance Benefits	
Valuation date	6/30/2015
Actuarial cost method	Entry Age
Amortization	Level Percent Closed
Remaining amortization period	28 years
Asset valuation method	5 Year Smoothed Market
Medical Trend Assumption (Pre-Medicare)	7.50% - 5.00%
Medical Trend Assumption (Post-Medicare)	5.50% - 5.00%
Year of Ultimate Trend	2020
Dollar Contribution Trend	1.50%
Actuarial assumptions:	
Investment rate of return*	7.50%
*Includes price inflation at	3.25%



SCHEDULE A

Valuation Balance Sheet and Solvency Test

The following valuation balance sheets show the assets and liabilities of the retirement system as of the current valuation date of June 30, 2015 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2014. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date.

VALUATION BALANCE SHEETS SHOWING THE ASSETS AND LIABILITIES OF THE STATE POLICE RETIREMENT SYSTEM

RETIREMENT BENEFITS

	JUNE 30, 2015	JUNE 30, 2014
ASSETS		
Current actuarial value of assets	\$ 248,387,946	\$ 242,741,735
Prospective contributions		
Member contributions	\$ 32,949,643	\$ 32,424,439
Employer normal contributions	30,925,190	31,007,228
Unfunded accrued liability contributions	<u>485,768,500</u>	<u>438,376,667</u>
Total prospective contributions	<u>\$ 549,643,333</u>	<u>\$ 501,808,334</u>
Total assets	<u>\$ 798,031,279</u>	<u>\$ 744,550,069</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 601,295,055	\$ 559,105,744
Present value of benefits payable on account of active members	192,176,374	181,539,042
Present value of benefits payable on account of inactive members	<u>4,559,850</u>	<u>3,905,282</u>
Total liabilities	<u>\$ 798,031,279</u>	<u>\$ 744,550,068</u>



**VALUATION BALANCE SHEET
INSURANCE BENEFITS**

	JUNE 30, 2015	JUNE 30, 2014
ASSETS		
Current actuarial value of assets	\$ 167,774,940	\$ 155,594,760
Prospective contributions		
Member contributions	\$ 1,558,766	\$ 1,054,241
Employer normal contributions	24,598,502	32,863,440
Unfunded accrued liability contributions	<u>87,063,770</u>	<u>78,676,367</u>
Total prospective contributions	<u>\$ 113,221,038</u>	<u>\$ 112,594,048</u>
 Total assets	 <u><u>\$ 280,995,978</u></u>	 <u><u>\$ 268,188,808</u></u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 165,675,982	\$ 139,228,358
 Present value of benefits payable on account of active members	 110,548,771	 124,786,682
 Present value of benefits payable on account of inactive members	 <u>4,771,225</u>	 <u>4,173,768</u>
 Total liabilities	 <u><u>\$ 280,995,978</u></u>	 <u><u>\$ 268,188,808</u></u>



The following tables provide the solvency test for SPRS members.

**Solvency Test
Retirement Benefits**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1)	(2)	(3)	Actuarial Value of Assets	(1)	(2)	(3)
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed Portion)				
6/30/2010	\$ 42,011,523	\$ 475,892,659	\$ 94,540,624	\$ 304,577,292	100.0%	55.2%	0.0%
6/30/2011	43,574,097	499,194,229	91,611,075	285,580,631	100.0	48.5	0.0
6/30/2012	41,139,306	523,016,647	83,532,712	259,791,575	100.0	41.8	0.0
6/30/2013	39,788,421	535,720,195	76,072,038	241,800,328	100.0	37.7	0.0
6/30/2014	41,831,465	563,011,026	76,275,911	242,741,735	100.0	35.7	0.0
6/30/2015	41,567,127	605,854,905	86,734,414	248,387,946	100.0	34.1	0.0

**Solvency Test
Insurance Benefits**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1)	(2)	(3)	Actuarial Value of Assets	(1)	(2)	(3)
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed Portion)				
6/30/2010	\$ 0	\$ 253,580,827	\$ 181,379,668	\$ 121,175,083	100.0%	47.8%	0.0%
6/30/2011	0	252,439,726	185,988,037	123,687,289	100.0	49.0	0.0
6/30/2012	0	190,258,729	143,645,053	124,372,072	100.0	65.4	0.0
6/30/2013	0	139,508,590	82,818,153	136,321,060	100.0	97.7	0.0
6/30/2014	0	143,402,126	90,869,001	155,594,760	100.0	100.0	13.4
6/30/2015	0	170,447,207	84,391,503	167,774,940	100.0	98.4	0.0



SCHEDULE B

**Development of Actuarial Value of Assets
Retirement Benefits**

Valuation date June 30:	2014	2015	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	\$ 241,800,328	\$ 242,741,735				
B. Market Value End of Year	260,763,486	246,968,144				
C. Market Value Beginning of Year	248,559,040	260,763,486				
D. Cash Flow						
D1. Contributions	25,284,602	37,836,413				
D2. Benefit Payments	(53,239,125)	(54,850,254)				
D3. Administrative Expenses	(214,953)	(201,108)				
D4. Investment Expenses	<u>(1,020,182)</u>	<u>(1,681,302)</u>				
D5. Net	(29,189,658)	(18,896,251)				
E. Investment Income						
E1. Market Total: B.-C.-D5.	41,394,104	5,100,909				
E2. Assumed Rate	7.75%	7.75%				
E3. Amount for Immediate Recognition	19,191,940	21,223,393				
E4. Amount for Phased-In Recognition	22,202,164	(16,122,484)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	4,440,433	(3,224,497)	0	0	0	0
F2. First Prior Year	983,544	4,440,433	(3,224,497)	0	0	0
F3. Second Prior Year	(3,810,203)	983,544	4,440,433	(3,224,497)	0	0
F4. Third Prior Year	4,929,792	(3,810,203)	983,544	4,440,433	(3,224,497)	0
F5. Fourth Prior Year	<u>4,395,559</u>	<u>4,929,792</u>	<u>(3,810,203)</u>	<u>983,544</u>	<u>4,440,433</u>	<u>(3,224,497)</u>
F6. Total Recognized Investment Gain	10,939,125	3,319,069	(1,610,723)	2,199,480	1,215,936	(3,224,497)
G. Actuarial Value End of Year:						
A.+D5.+E3.+F6.	\$ 242,741,735	\$ 248,387,946				
H. Difference Between Market & Actuarial Values	\$ 18,021,751	\$ (1,419,802)	\$ 190,921	\$ (2,008,559)	\$ (3,224,497)	\$ 0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



**Development of Actuarial Value of Assets
Insurance Benefits**

Valuation date June 30:	2014	2015	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	\$ 136,321,060	\$ 155,594,760				
B. Market Value End of Year	165,167,805	165,018,209				
C. Market Value Beginning of Year	142,830,916	165,167,805				
D. Cash Flow						
D1. Contributions	14,574,060	10,476,944				
D2. Benefit Payments	(12,687,531)	(13,482,044)				
D3. Administrative Expenses	(57,433)	(64,526)				
D4. Investment Expenses	<u>(647,239)</u>	<u>(1,185,520)</u>				
D5. Net	1,181,857	(4,255,146)				
E. Investment Income						
E1. Market Total: B.-C.-D5.	21,155,032	4,105,550				
E2. Assumed Rate	7.75%	0.00%				
E3. Amount for Immediate Recognition	11,787,512	13,867,077				
E4. Amount for Phased-In Recognition	9,367,520	(9,761,527)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	1,873,504	(1,952,305)	0	0	0	0
F2. First Prior Year	603,078	1,873,504	(1,952,305)	0	0	0
F3. Second Prior Year	(1,774,183)	603,078	1,873,504	(1,952,305)	0	0
F4. Third Prior Year	3,818,155	(1,774,183)	603,078	1,873,504	(1,952,305)	0
F5. Fourth Prior Year	<u>1,783,777</u>	<u>3,818,155</u>	<u>(1,774,183)</u>	<u>603,078</u>	<u>1,873,504</u>	<u>(1,952,305)</u>
F6. Total Recognized Investment Gain	6,304,331	2,568,249	(1,249,906)	524,277	(78,801)	(1,952,305)
G. Actuarial Value End of Year:						
A.+D5.+E3.+F6.	\$ 155,594,760	\$ 167,774,940				
H. Difference Between Market & Actuarial Values	\$ 9,573,045	\$ (2,756,731)	\$ (1,506,825)	\$ (2,031,102)	\$ (1,952,305)	\$ 0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



SCHEDULE C

STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the valuation were based on the actuarial experience study for the five-year period ending June 30, 2013, submitted April 30, 2014, and adopted by the Board on December 4, 2014.

INVESTMENT RATE OF RETURN: 7.50% per annum, compounded annually for retirement and insurance benefits.

PRICE INFLATION: 3.25% per annum, compounded annually.

PAYROLL GROWTH: 4.00% per annum, compounded annually.

SALARY INCREASES: The assumed annual rates of future salary increases are as follows and include inflation at 4.00% per annum:

Service Years	Annual Rates of Salary Increases		
	Merit & Seniority	Base (Economy)	Increase Next Year
0-1	12.02%	4.00%	16.50%
1-2	7.21%	4.00%	11.50%
2-3	5.29%	4.00%	9.50%
3-4	4.33%	4.00%	8.50%
4-5	3.37%	4.00%	7.50%
5-6	2.40%	4.00%	6.50%
6-7	1.92%	4.00%	6.00%
7-8	1.92%	4.00%	6.00%
8-9	0.96%	4.00%	5.00%
9-10	0.48%	4.00%	4.50%
10 & Over	0.00%	4.00%	4.00%

DISABILITY: Representative assumed annual rates of disability are as follows:

Nearest Age	Annual Rates of Disability	
	Male	Female
20	0.05%	0.05%
30	0.09%	0.09%
40	0.20%	0.20%
50	0.56%	0.56%
60	1.46%	1.46%



RETIREMENT: The assumed annual rates of retirement are as follows:

Annual Rates of Retirement		
Service	Those Eligible for Service Retirement ⁺	Those Eligible for Service Retirement ⁺⁺
20	22.00%	
21	22.00%	
22	22.00%	
23	28.00%	
24	28.00%	
25	28.00%	22.00%
26	28.00%	22.00%
27	28.00%	22.00%
28	44.00%	28.00%
29	44.00%	28.00%
30	44.00%	28.00%
31	58.00%	28.00%
32	58.00%	28.00%
33	58.00%	44.00%
34	58.00%	44.00%
35	58.00%	44.00%
36	58.00%	58.00%
37	58.00%	58.00%
38	58.00%	58.00%
39	58.00%	58.00%
40	58.00%	58.00%

+ For members participating before September 1, 2008. The annual rate of service retirement is 100% at age 55.

++ For members participating on or after September 1, 2008. The annual rate of service retirement is 100% at age 60.



WITHDRAWAL: The assumed annual rates of withdrawal are as follows:

Service Years	Annual Rates of Withdrawal
0-1	20.00%
1-2	7.00%
2-9	3.00%
9 & Over	2.50%

DEATH BEFORE RETIREMENT: The rates of mortality for the period before retirement are according to the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (multiplied by 50% for males and 30% for females).

DEATH AFTER RETIREMENT: The rates of mortality for the period after service retirement are according to the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (set back 1 year for females) for all healthy retired members and beneficiaries. The RP-2000 Combined Disabled Mortality Table projected with Scale BB to 2013 (set back 4 years for males) is used for the period after disability retirement. These assumptions are used to measure the probabilities of each benefit payment being made after retirement. These assumptions contain margin for mortality improvements.

PERCENT MARRIED: 100% of employees are assumed to be married, with the wife 3 years younger than the husband.

DEPENDENT CHILDREN: For hazardous members' duty-related death benefits, it is assumed that the member is survived by two dependent children each age 6.

FORM OF PAYMENT: Participants are assumed to elect a life-only form of payment.

ASSET VALUATION METHOD: Five-year market related actuarial value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the ultimate assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected actuarial value.



ACTUARIAL COST METHOD: Costs were determined using the Entry Age Normal, Level Percentage of Pay Actuarial Cost Method. Under this method, a calculation is made for retirement benefits to determine the uniform and constant percentage rate of contribution which, if applied to the compensation of the average new member during the entire period of his or her anticipated covered service, would be required to meet the cost of benefits payable. Actuarial gains and losses are reflected in the unfunded actuarial accrued liability.

MULTIPLE STATUS/MULTIPLE SYSTEM MEMBERS: Some members may be represented under more than one retirement system and/or may have more than one status (e.g., active in one system, deferred vested in another and retired from a different system). For pension purposes, members that are active in one System but have service in another are assumed to retire from the System in which they are currently active. Any deferred pension benefits from another System are assumed to begin once the member terminates from their current active position. The insurance liabilities for multiple status/multiple system members are calculated assuming only one benefit is payable across all Systems and that benefit is payable from the combination of status and System which produces the highest economic value to the member.

AFFORDABLE CARE ACT (ACA): The impact of the Affordable Care Act (ACA) was addressed in this valuation. Review of the information currently available did not identify any specific provisions of the ACA that are anticipated to significantly impact results. While the impact of certain provisions such as the excise tax on high-value health insurance plans beginning in 2018 (if applicable), mandated benefits and participation changes due to the individual mandate should be recognized in the determination of liabilities, overall future plan costs and the resulting liabilities are driven by the assumed rate of health care inflation (i.e., trend). The trend assumption forecasts the anticipated increase to initial per capita costs, taking into account health care cost inflation, increases in benefit utilization, government-mandated benefits, and technological advances. Given the uncertainty regarding the ACA's implementation (e.g., the impact of excise tax on high-value health insurance plans, changes in participation resulting from the implementation of state-based health insurance exchanges), continued monitoring of the ACA's impact on the insurance liability will be required.

HEALTH CARE BENEFITS VALUED: Medical and drug benefits for retirees under age 65 and Medicare eligible.

HEALTH CARE SPOUSE AGE DIFFERENCE: Wives are assumed to be three years younger than husbands.

HEALTH CARE COST TREND RATES: Following is a chart detailing trend assumptions.

Year	Annual Rate of Increase		
	Under Age 65	Age 65 & Older	Dollar Contribution*
2015	7.50%	5.50%	1.50%
2016	6.75%	5.25%	1.50%
2017	6.25%	5.00%	1.50%
2018	5.75%	5.00%	1.50%
2019	5.25%	5.00%	1.50%
2020 & Beyond	5.00%	5.00%	1.50%

* Applies to members participating on or after July 1, 2003



HEALTH CARE AGE RELATED MORBIDITY: For retirees ages 65 and older, per capita health care costs are adjusted to reflect expected health care cost changes related to age. The increase to the net incurred claims was assumed to be:

Participant Age	Annual Increase
65 – 69	3.00%
70 – 74	2.50%
75 – 79	2.00%
80 – 84	1.00%
85 – 89	0.50%
90 & Beyond	0.00%

For the retiree health care liabilities of those under age 65, the current premium charged by the Kentucky Employees' Health Plan (KEHP) is used as the base cost and is projected forward using the healthcare trend assumption. No implicit rate subsidy is calculated or recognized as the implicit rate subsidy is deemed the responsibility of the KEHP.

HEALTH CARE DEFERRED VESTED BENEFIT RECIPIENT INITIAL AGE OF BENEFIT RECEIPT FOR MEMBERS: Health care benefits are assumed to begin at the following ages for deferred vested benefit recipients:

Deferred Vested Initial Age of Benefit Receipt		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
50	50	50



HEALTH CARE ANTICIPATED PLAN PARTICIPATION: Representative values of the assumed annual rates of member participation and spouse coverage are as follows:

Plan Elections of Covered Members Age 65 and Older as of January 1, 2016	
Kentucky Retirement System Health Plan	Hazardous
Medical Only	2.92%
Essential	1.44%
Premium	95.64%

Retirement Participation Rates			
Service at Retirement	Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
Under 10	100.00%	100.00%	100.00%
10 – 14	100.00%	100.00%	100.00%
15 – 19	100.00%	100.00%	100.00%
20+	100.00%	100.00%	100.00%

Disability/Death Participation Rates	
Members Participating Before July 1, 2003	
Duty-Disability	Duty Death-In-Service
100.00%	100.00%

Deferred Vested Member Participation Rates		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
100.00%	100.00%	100.00%

Members Electing Spouse Coverage		
Members Participating Before July 1, 2003	Members Participating Between July 1, 2003 to September 1, 2008	Members Participating On or After September 1, 2008
75.00%	75.00%	75.00%



HEALTH CARE MONTHLY PLAN COSTS: Assumed per capita health care costs were based on past experience and trended based on the assumptions. Following are charts detailing retiree per capita assumptions for the year following the valuation date. The amounts include medical and drug costs. Members under 65 are assumed to elect the LivingWell PPO. For retirees ages 65 and older, the full costs shown are before averaging. The average costs are then normalized to age 65 and age adjusted in calculating liabilities. The dollar amount contribution level is the cost to the system per year of service for members participating on or after July 1, 2003.

Under Age 65 (KEHP) Full Costs as of January 1, 2016				
Tier Elected	LivingWell CDHP	LivingWell PPO	Standard PPO	Standard CDHP
Single	\$ 702.10	\$ 721.14	\$ 677.74	\$ 663.68
Parent Plus	967.18	1,023.04	963.36	930.34
Couple	1,302.74	1,564.20	1,474.84	1,429.26
Family	1,453.94	1,738.40	1,640.84	1,591.52
Family C-R	810.00	865.64	814.72	792.90

Age 65 and Older Full Costs as of January 1, 2016	
Kentucky Retirement System Health Plan - Medical Only	\$158.25
Kentucky Retirement System Health Plan - Essential	77.76
Kentucky Retirement System Health Plan - Premium	244.25

Age 65 and Older Average Cost as of the Valuation Date Based on Actual Retiree Elections
Hazardous
\$227.19

Dollar Amount Contribution Level Per Year of Service as of July 1, 2015
Applies to members participating on or after July 1, 2003
Hazardous
\$19.19



SCHEDULE D

SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS

This schedule summarizes the major retirement benefit provisions of SPRS included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year: July 1 through June 30

Normal Retirement:

Members whose participation began before 9/1/2008

Age Requirement 55

Service Requirement At least one month of hazardous duty service credit

Amount If a member has at least 60 months of service, the monthly benefit is 2.50% multiplied by final average compensation, multiplied by years of service.

Final compensation is calculated by taking the average of the highest three (3) fiscal years of salary. If the number of months of service credit during the three (3) year period is less than twenty-four (24), one (1) or more additional fiscal years shall be used.

If a member has less than 60 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.

Members whose participation began on or after 9/1/2008 but before 1/1/2014

Age Requirement 60

Service Requirement At least 60 months of hazardous duty service credit

Amount The monthly benefit is the following benefit factor based on service credit at retirement, multiplied by final average compensation, multiplied by years of service.

Service Credit	Benefit Factor
10 years or less	1.30%
10+ – 20 years	1.50%
20+ – 25 years	2.25%
25+ years	2.50%

Final compensation is calculated by taking the average of the highest three (3) complete fiscal years of salary. Each fiscal year used to determine final compensation must contain twelve (12) months of service credit.

If a member has less than 60 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.



Normal Retirement (continued):

Members whose participation began on or after 1/1/2014

<i>Age Requirement</i>	60
<i>Service Requirement</i>	At least 60 months of hazardous duty service credit or 25 or more years of service, with no age requirement
<i>Amount</i>	Each year that a member is an active contributing member to the System, the member and the member's employer will contribute 8.00% and 7.50% of creditable compensation respectively into a hypothetical account. This hypothetical account will earn interest annually on both the member's and employer's contribution at a minimum rate of 4%. If the System's geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year.

Upon retirement the hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or annuitized into a single life annuity option.

Early Retirement:

Members whose participation began before 9/1/2008

<i>Requirement</i>	Age 50 with 15 years of service or any age with 20 years of service.
<i>Amount</i>	Normal retirement benefit reduced by 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member is younger than age 55 or has less than 20 years of service, whichever is smaller.

Members whose participation began on or after 9/1/2008 but before 1/1/2014

<i>Requirement</i>	Age 50 with 15 years of service or any age with 25 years of service.
<i>Amount</i>	Normal retirement benefit reduced by 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member is younger than age 60 or has less than 25 years of service, whichever is smaller.



Disability:

Age Requirement

None

Service Requirement

60 months (waived if in line of duty disability)

Members whose participation began before 8/1/2004

Normal retirement benefit except if the member's total service credit is less than 20 years, service credit will be added for the period from the last day of paid employment to the member's 55th birthday.

The maximum service credit added will not exceed the total service the member had on this last day of paid employment and the maximum service credit for calculating his retirement allowance, including total service and service added will not exceed 20 years. May not apply if eligible for an unreduced retirement allowance.

A member in a hazardous position who is disabled in the line of duty is entitled to the normal retirement benefit based on years of service and final compensation determined as of the date of disability (no penalty), except that the monthly retirement allowance payable shall not be less than 25% of the member's monthly final rate of pay. Each dependent child shall receive 10% of the disabled member's monthly final rate of pay; however the total maximum dependent children's benefit shall not exceed 40% of the member's monthly final rate of pay.

Members whose participation began on or after 8/1/2004 but before 1/1/2014

Normal retirement benefit based on years of service and final compensation determined as of the date of disability (no penalty) or, if larger, 25% of the member's monthly final rate of pay.

Members whose participation began on or after 1/1/2014

The hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or an annuity equal to the larger of 25% of the member's monthly final rate of pay or the annuitized hypothetical account into a single life annuity option.



Vesting:

Members whose participation began before 9/1/2008

<i>Age Requirement</i>	None
<i>Service Requirement</i>	60 months. Service purchased after August 1, 2004 does not count toward vesting insurance benefits. Service purchased by employees who began participating on or after August 1, 2004 does not count toward vesting retirement benefits. Recontribution of refunds and omitted service purchases are the exception to this rule for service requirement.
<i>Amount</i>	Normal retirement benefit deferred to normal retirement age or reduced benefit payable at early retirement age.
<i>Normal Retirement Age</i>	55

Members whose participation began on or after 9/1/2008 but before 1/1/2014

<i>Age Requirement</i>	None
<i>Service Requirement</i>	60 months.
<i>Amount</i>	Normal retirement benefit deferred to normal retirement age or reduced benefit payable at early retirement age.

Members whose participation began on or after 1/1/2014

<i>Age Requirement</i>	None
<i>Service Requirement</i>	60 months.
<i>Amount</i>	Upon termination the hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or the member can elect to leave the hypothetical account balance in the System. If the member does not withdraw the account balance, it will continue to earn 4% interest. Upon reaching normal retirement age the member can apply for retirement and receive the account balance as a lump sum payment or annuitize the account balance into a single life annuity.



Pre-Retirement Death Benefit (not in line of duty):

Members whose participation began before 1/1/2014

Requirement Eligible for Normal or Early Retirement, or any age in active employment with 60 months service, or any age and not in active employment with at least 144 months of service.

Amount Benefit equal to the benefit the member would have received had the member retired on the day before the date of death and elected a 100% joint and survivor form. Benefit is actuarially reduced if member is less than normal retirement age at the date of death.

Members whose participation began on or after 1/1/2014

Requirement 60 months service

Amount The maximum of the benefit equal to the benefit the member would have received had the member retired on the day before the date of death.

Spouse's Pre-Retirement Death Benefit (in line of duty):

Requirement None

Amount The spouse may choose (1) a \$10,000 lump sum payment and monthly payments of 25% of the member's final monthly rate of pay or (2) benefit options offered under death not in line of duty.

Dependent Non-Spouse's Death Benefit (in line of duty):

Requirement None

Amount The non-spouse may choose (1) a \$10,000 lump sum payment or (2) benefit options offered under death not in line of duty.

Dependent Child's Death Benefit (in line of duty):

Requirement None

Amount 10% of member's final monthly rate of pay. Dependent child payments cannot exceed 40% of the member's monthly final rate of pay.



Post-Retirement Death Benefit:

Requirement

Retired member in receipt of monthly benefit based on at least 48 months or more of combined service with KERS, CERS or SPRS.

Amount

\$5,000

Member Contributions:

Members whose participation began before 9/1/2008

8% of all creditable compensation. Interest paid on the members' accounts is currently set at 2.5% and per statute, shall not be less than 2.0%. Member entitled to a full refund of contributions with interest.

Members whose participation began on or after 9/1/2008 and up to 1/1/2014

9% of all creditable compensation, with 8% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Interest paid on the members' accounts will be set at 2.5%. Member entitled to a full refund of contributions and interest in their individual account, however, the 1% contributed to the insurance fund is non-refundable.

Members whose participation began on or after 1/1/2014

9% of all creditable compensation, with 8% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Member entitled to a full refund of contributions and interest on the member's portion of the hypothetical account, however, the 1% contributed to the insurance fund is non-refundable.



Insurance Plan for Retirees:

Members whose participation began before 7/1/2003

Requirement

In receipt of a monthly retirement allowance.

Amount

The Retirement System pays a portion of lifetime medical premiums for retirees, their spouse and their dependents based on the retired member's years of service credit. The percentage of the monthly contribution rate paid is show in the following table.

Service Credit	Percentage Paid*
0 – 3 years	0%
4 – 9 years	25%
10 – 14 years	50%
15 – 19 years	75%
20 or more years	100%

**100% of the monthly contribution is paid towards the health insurance for a member, member's spouse and dependents if the member is disabled in the line of duty as a result of a duty-related injury, regardless of actual service. 100% of the monthly contribution is paid toward health insurance for the spouse and dependent children of a member who dies in the line of duty regardless of the deceased member's service. The insurance benefit will be provided as long as the spouse and dependent children are eligible for a monthly retirement benefit.*

Members whose participation began on or after 7/1/2003, but before 9/1/2008

Requirement

Monthly retirement allowance with at least 120 months of service at retirement.

Amount

The Retirement System pays \$19.19 per month for each year of earned service for retirees. Upon the retiree's death, the surviving spouse will receive \$12.80 per month for each year of earned. These amounts are shown as of the valuation date and will be increased annually by 1.5%.

Members whose participation began on or after 9/1/2008

Requirement

Monthly retirement allowance with at least 180 months of service at retirement.

Amount

The Retirement System pays \$19.19 per month for each year of earned service for retirees. Upon the retiree's death, the surviving spouse will receive \$12.80 per month for each year of earned. These amounts will be increased annually by 1.5%.



SCHEDULE E

DETAILED TABULATIONS OF THE DATA

**Schedule of Retired Members Added to and Removed From Rolls
Last Six Fiscal Years**

Year Ending June 30	2010	2011	2012	2013	2014	2015
	<u>Number</u>					
Beginning of Year	1,184	1,223	1,263	1,299	1,346	1,413
Added	54	52	52	63	95	62
Removed	15	12	16	16	28	15
End of Year	1,223	1,263	1,299	1,346	1,413	1,460
	<u>Annual Allowances</u>					
Beginning of Year	\$ 44,273,937	\$ 45,515,797	\$ 47,467,404	\$ 49,887,093	\$ 50,905,789	\$ 53,432,446
Added	1,543,665	2,341,589	3,026,513	1,471,331	3,360,043	1,946,803
Removed	301,805	389,982	606,825	452,635	833,386	448,827
End of Year	\$ 45,515,797	\$ 47,467,404	\$ 49,887,093	\$ 50,905,789	\$ 53,432,446	\$ 54,930,421
% Increase in Allowances	2.80%	4.29%	5.10%	2.04%	4.96%	2.80%
Average Annual Allowance	\$ 37,217	\$ 37,583	\$ 38,404	\$ 37,820	\$ 37,815	\$ 37,624



Retired Lives Summary June 30, 2015

	Male Lives		Female Lives		Total	
	Number	Monthly Benefits	Number	Monthly Benefits	Number	Monthly Benefits
Basic Form	134	\$ 402,957.64	14	\$ 43,388.33	148	\$ 446,345.97
Straight Life (Old Plan)	0	0.00	0	0.00	0	0.00
Joint & Survivor						
100% to Beneficiary	133	429,211.15	1	4,813.66	134	434,024.81
66-2/3% to Beneficiary	82	313,940.19	2	7,541.82	84	321,482.01
50% to Beneficiary	85	309,723.84	1	2,604.67	86	312,328.51
Pop-up Option	543	1,948,838.63	4	10,805.22	547	1,959,643.85
10 Years Certain	3	9,656.29	0	0.00	3	9,656.29
10 Years Certain & Life	37	115,460.88	2	5,033.86	39	120,494.74
Social Security Option						
Age 62 Basic	30	82,882.80	0	0.00	30	82,882.80
Age 62 Survivorship	124	256,317.49	1	7,930.47	125	264,247.96
Partial Deferred (Old Plan)	0	0.00	0	0.00	0	0.00
Widows Age 60	0	0.00	0	0.00	0	0.00
Dependent Child	0	0.00	0	0.00	0	0.00
Refund	0	0.00	0	0.00	0	0.00
15 Years Certain & Life	18	48,399.66	1	3,918.67	19	52,318.33
20 Years Certain & Life	36	112,009.10	2	3,978.81	38	115,987.91
5 Years Certain	0	0.00	0	0.00	0	0.00
PLSO 12 Month Basic	0	0.00	0	0.00	0	0.00
PLSO 24 Month Basic	0	0.00	0	0.00	0	0.00
PLSO 36 Month Basic	0	0.00	2	466.41	2	466.41
PLSO 12 Month Survivor	6	20,781.22	0	0.00	6	20,781.22
PLSO 24 Month Survivor	4	5,952.60	0	0.00	4	5,952.60
PLSO 36 Month Survivor	9	16,914.11	0	0.00	9	16,914.11
Total	1,244	\$ 4,073,045.60	30	\$ 90,481.92	1,274	\$ 4,163,527.52



Beneficiary Lives Summary June 30, 2015

	Male Lives		Female Lives		Total	
	Number	Monthly Benefits	Number	Monthly Benefits	Number	Monthly Benefits
Basic Form	0	\$ 0.00	5	\$ 4,584.52	5	\$ 4,584.52
Straight Life (Old Plan)	0	0.00	0	0.00	0	0.00
Joint & Survivor						
100% to Beneficiary	6	5,883.26	60	160,931.82	66	166,815.08
66-2/3% to Beneficiary	2	1,206.05	10	18,639.77	12	19,845.82
50% to Beneficiary	0	0.00	15	21,773.84	15	21,773.84
Pop-up Option	2	1,154.22	33	88,328.02	35	89,482.24
10 Years Certain	0	0.00	0	0.00	0	0.00
10 Years Certain & Life	0	0.00	1	389.49	1	389.49
Social Security Option						
Age 62 Basic	0	0.00	2	2,281.46	2	2,281.46
Age 62 Survivorship	0	0.00	42	83,903.41	42	83,903.41
Partial Deferred (Old Plan)	0	0.00	0	0.00	0	0.00
Widows Age 60	0	0.00	0	0.00	0	0.00
Dependent Child	0	0.00	0	0.00	0	0.00
Refund	0	0.00	1	893.10	1	893.10
15 Years Certain & Life	0	0.00	0	0.00	0	0.00
20 Years Certain & Life	1	6,685.69	5	10,001.56	6	16,687.25
5 Years Certain	0	0.00	0	0.00	0	0.00
PLSO 12 Month Basic	0	0.00	0	0.00	0	0.00
PLSO 24 Month Basic	0	0.00	0	0.00	0	0.00
PLSO 36 Month Basic	0	0.00	0	0.00	0	0.00
PLSO 12 Month Survivor	0	0.00	0	0.00	0	0.00
PLSO 24 Month Survivor	0	0.00	1	7,351.41	1	7,351.41
PLSO 36 Month Survivor	0	0.00	0	0.00	0	0.00
Total	11	\$ 14,929.22	175	\$ 399,078.40	186	\$ 414,007.62



**Retired and Beneficiary Information June 30, 2015
Tabulated by Attained Ages**

Attained Age	Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 45	35	\$ 1,340,592	9	\$ 165,095	16	\$ 100,053	60	\$ 1,605,740
45-49	138	5,428,008	6	127,998	2	33,062	146	5,589,068
50-54	166	6,844,378	7	90,601	4	47,830	177	6,982,809
55-59	138	5,783,238	6	122,091	16	264,134	160	6,169,463
60-64	233	9,688,311	8	92,961	15	412,444	256	10,193,716
65-69	267	10,692,229	8	181,486	29	805,643	304	11,679,358
70-74	116	4,258,029	3	46,115	30	830,307	149	5,134,451
75-79	67	2,399,808	3	74,826	12	425,362	82	2,899,996
80-84	41	1,661,546	2	33,710	23	816,263	66	2,511,519
85-89	16	693,429	0	0	23	721,813	39	1,415,242
90 & Over	5	237,880	0	0	16	511,179	21	749,059
Totals	1,222	\$ 49,027,448	52	\$ 934,883	186	\$ 4,968,090	1,460	\$ 54,930,421



**Total Active Members as of June 30, 2015
Tabulated by Attained Ages and Years of Service**

Attained Age	Years of Service to Valuation Date								Totals
	0-4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 26	27 - 29	30+	
Under 20 Avg Pay									
20-24 Avg Pay	52 \$23,785								52 \$23,785
25-29 Avg Pay	129 \$34,949	22 \$46,312							151 \$36,605
30-34 Avg Pay	65 \$41,095	60 \$47,883	38 \$51,183						163 \$45,946
35-39 Avg Pay	34 \$41,363	37 \$48,770	115 \$53,103	28 \$54,816	1 \$16,195				215 \$50,552
40-44 Avg Pay	13 \$37,723	18 \$49,029	62 \$53,025	70 \$59,002	32 \$69,237	1 \$75,491			196 \$56,539
44-49 Avg Pay	4 \$44,050	11 \$49,587	23 \$52,983	39 \$57,631	26 \$66,983	7 \$64,101	2 \$88,500		112 \$58,528
50-54 Avg Pay		4 \$49,741	10 \$51,639	5 \$60,847	12 \$62,976	3 \$75,967	1 \$91,416	1 \$76,089	36 \$60,297
55-59 Avg Pay		2 \$46,862		1 \$48,983				6 \$76,823	9 \$67,072
60-64 Avg Pay				1 \$67,383				1 \$78,353	2 \$72,868
65-69 Avg Pay								1 \$85,601	1 \$85,601
70 & over Avg Pay									
Totals	297	154	248	144	71	11	3	9	937
Avg Pay	\$35,318	\$48,162	\$52,719	\$57,870	\$66,607	\$68,372	\$89,472	\$77,887	\$48,842



SCHEDULE F

SENSITIVITY ANALYSIS

The valuation results are projections based on the actuarial assumptions. Actual experience will differ from these assumptions, either increasing or decreasing cost. The charts on the following pages provide a simple analysis on how the costs are sensitive to changes to the assumed discount rate, the assumed inflation rate and the rate of payroll growth. The charts show the actuarial accrued liability, the unfunded liability, the funded ratio and the employer contribution rate under the following scenarios:

- The discount rate assumption sensitivity analysis shows the valuation results with the baseline discount rate assumption, 7.50%, together with a decrease in the discount rate to 6.50% and an increase in the discount rate to 8.50%. Under this scenario, the underlying inflation rate assumption is held constant at 3.25% and the payroll growth assumption is held constant at 4.00%.
- The inflation assumption sensitivity analysis shows the valuation results with the baseline underlying inflation rate assumption, 3.25%, together with decreases in the inflation rate to 3.00% and 2.75%. Under this scenario, the decrease in the underlying inflation rate assumption leads to corresponding decreases in the discount rate, the payroll growth assumption and the healthcare trend assumption for members hired before 7/1/2003.
- The payroll growth assumption sensitivity analysis shows the valuation results with the baseline underlying payroll growth assumption, 4.00%, together with decreases in the payroll growth assumption to 2.00% and 0.00%. Under this scenario, all other assumptions, including the individual member salary scale, are held constant so that the only impact is in the amortization of the unfunded liability, leading to higher employer contribution rates.



ASSUMED DISCOUNT RATE SENSITIVITY ANALYSIS

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
Retirement			
Actuarial Accrued Liability	\$ 811,020,318	\$ 734,156,446	\$ 669,475,953
Actuarial Value of Assets	<u>248,387,946</u>	<u>248,387,946</u>	<u>248,387,946</u>
Unfunded Liability	\$ 562,632,372	\$ 485,768,500	\$ 421,088,007
Funded Ratio	30.63%	33.83%	37.10%
Contribution Rate	71.87%	66.47%	61.85%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%
Insurance			
Actuarial Accrued Liability	\$ 288,119,708	\$ 254,838,710	\$ 227,600,636
Actuarial Value of Assets	<u>167,774,940</u>	<u>167,774,940</u>	<u>167,774,940</u>
Unfunded Liability	\$ 120,344,768	\$ 87,063,770	\$ 59,825,696
Funded Ratio	58.23%	65.84%	73.71%
Contribution Rate	23.75%	18.87%	14.60%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%
SPRS Total			
Actuarial Accrued Liability	\$ 1,099,140,026	\$ 988,995,156	\$ 897,076,589
Actuarial Value of Assets	<u>416,162,886</u>	<u>416,162,886</u>	<u>416,162,886</u>
Unfunded Liability	\$ 682,977,140	\$ 572,832,270	\$ 480,913,703
Funded Ratio	37.86%	42.08%	46.39%
Contribution Rate	95.62%	85.34%	76.45%
Discount Rate	6.50%	7.50%	8.50%
Payroll Growth	4.00%	4.00%	4.00%
Inflation Rate	3.25%	3.25%	3.25%



INFLATION ASSUMPTION SENSITIVITY ANALYSIS

	Valuation Results	Decrease Inflation Rate 25 basis points	Decrease Inflation Rate 50 basis points
Retirement			
Actuarial Accrued Liability	\$ 734,156,446	\$ 751,321,300	\$ 771,262,633
Actuarial Value of Assets	<u>248,387,946</u>	<u>248,387,946</u>	<u>248,387,946</u>
Unfunded Liability	\$ 485,768,500	\$ 502,933,354	\$ 522,874,687
Funded Ratio	33.83%	33.06%	32.21%
Contribution Rate	66.47%	69.16%	72.23%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%
Insurance			
Actuarial Accrued Liability	\$ 254,838,710	\$ 255,247,724	\$ 255,677,698
Actuarial Value of Assets	<u>167,774,940</u>	<u>167,774,940</u>	<u>167,774,940</u>
Unfunded Liability	\$ 87,063,770	\$ 87,472,784	\$ 87,902,758
Funded Ratio	65.84%	65.73%	65.62%
Contribution Rate	18.87%	19.01%	19.16%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%
SPRS Total			
Actuarial Accrued Liability	\$ 988,995,156	\$ 1,006,569,024	\$ 1,026,940,331
Actuarial Value of Assets	<u>416,162,886</u>	<u>416,162,886</u>	<u>416,162,886</u>
Unfunded Liability	\$ 572,832,270	\$ 590,406,138	\$ 610,777,445
Funded Ratio	42.08%	41.34%	40.52%
Contribution Rate	85.34%	88.17%	91.39%
Discount Rate	7.50%	7.25%	7.00%
Payroll Growth	4.00%	3.75%	3.50%
Inflation Rate	3.25%	3.00%	2.75%



PAYROLL GROWTH ASSUMPTION SENSITIVITY ANALYSIS

	Valuation Results	Decrease Payroll Growth 2%	No Payroll Growth
Retirement			
Actuarial Accrued Liability	\$ 734,156,446	\$ 734,156,446	\$ 734,156,446
Actuarial Value of Assets	<u>248,387,946</u>	<u>248,387,946</u>	<u>248,387,946</u>
Unfunded Liability	\$ 485,768,500	\$ 485,768,500	\$ 485,768,500
Funded Ratio	33.83%	33.83%	33.83%
Contribution Rate	66.47%	81.29%	98.28%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%
Insurance			
Actuarial Accrued Liability	\$ 254,838,710	\$ 254,838,710	\$ 254,838,710
Actuarial Value of Assets	<u>167,774,940</u>	<u>167,774,940</u>	<u>167,774,940</u>
Unfunded Liability	\$ 87,063,770	\$ 87,063,770	\$ 87,063,770
Funded Ratio	65.84%	65.84%	65.84%
Contribution Rate	18.87%	21.26%	23.91%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%
SPRS Total			
Actuarial Accrued Liability	\$ 988,995,156	\$ 988,995,156	\$ 988,995,156
Actuarial Value of Assets	<u>416,162,886</u>	<u>416,162,886</u>	<u>416,162,886</u>
Unfunded Liability	\$ 572,832,270	\$ 572,832,270	\$ 572,832,270
Funded Ratio	42.08%	42.08%	42.08%
Contribution Rate	85.34%	102.55%	122.19%
Discount Rate	7.50%	7.50%	7.50%
Payroll Growth	4.00%	2.00%	0.00%
Inflation Rate	3.25%	3.25%	3.25%



KENTUCKY RETIREMENT SYSTEMS

William A. Thielen, Executive Director

Perimeter Park West ▾ 1260 Louisville Road ▾ Frankfort, Kentucky 40601
kyret.ky.gov ▾ Phone: 502-696-8800 ▾ Fax: 502-696-8822



KENTUCKY RETIREMENT SYSTEMS BOARD OF TRUSTEES

Resolution No. 2-2015

A RESOLUTION CONCERNING THE FUNDING OF KENTUCKY RETIREMENT SYSTEMS BY THE COMMONWEALTH OF KENTUCKY

Whereas the ratios of existing assets to liabilities (funded status) for benefits already earned by members of the Kentucky Employees Retirement System (KERS), nonhazardous plan, and the Kentucky State Police Retirement System (SPRS) plan have fallen to 19.01% and 33.83%, respectively, based on the actuarial valuation conducted as of June 30, 2015; and

Whereas the severe underfunding in these plans jeopardizes the future ability of Kentucky Retirement Systems to pay promised pension and health insurance benefits to retired public employees and their beneficiaries.

Be it Resolved, that the Board of Trustees of the Kentucky Retirement Systems:

1. hereby conveys to the Governor and General Assembly of the Commonwealth that in order to protect the solvency of the KERS nonhazardous and SPRS plans so that promised retirement benefits can be paid in the future it is absolutely critical that the KERS nonhazardous and SPRS plans be funded at 100% of the actuarially required contribution rate (ARC) during the next biennial budget period and thereafter.

2. urges the Governor and General Assembly of the Commonwealth to contribute additional funds in excess of the ARC during the next biennial budget period in order further stabilize these plans.

Approved this 3rd day of December 2015 by a vote of the members of the Kentucky Retirement Systems Board of Trustees taken in public session at its regular quarterly meeting.

KENTUCKY RETIREMENT SYSTEMS BOARD OF TRUSTEES

By: 
Thomas K. Elliott, Chair



KENTUCKY RETIREMENT SYSTEMS

William A. Thielen, Executive Director

Perimeter Park West ▾ 1260 Louisville Road ▾ Frankfort, Kentucky 40601
kyret.ky.gov ▾ Phone: 502-696-8800 ▾ Fax: 502-696-8822



KENTUCKY RETIREMENT SYSTEMS BOARD OF TRUSTEES

Resolution No. 3-2015

A RESOLUTION REQUESTING THAT MEMBERS OF THE PUBLIC PENSION OVERSIGHT BOARD BE APPOINTED TO ATTEND KENTUCKY RETIREMENT SYSTEMS BOARD OF TRUSTEE COMMITTEE AND BOARD MEETINGS

Whereas the Public Pension Oversight Board (PPOB) was created by the passage of Senate Bill 2 during the 2013 Regular Session of the Kentucky General Assembly; and

Whereas the PPOB has the responsibility of serving as an advisory board to the Kentucky General Assembly with extensive authority under Kentucky Revised Statutes 7A.250 to review and recommend changes to the Kentucky statutes and regulations related to the operations of Kentucky Retirement Systems, including the benefits to be paid to retirees; the administration of the various retirement systems, and the investment of funds; and

Whereas the Kentucky Retirement System Board of Trustees believes that it would be beneficial to the PPOB, the Kentucky Retirement Systems, the Kentucky General Assembly and the Commonwealth as a whole for the members of the PPOB to have a greater understanding of the complex issues dealt with by the Kentucky Retirements Systems Board of Trustees and staff in the administration of the Systems and a greater understanding of the processes, procedures and policies utilized in the administration of the Systems.

Be it Resolved, that the Board of Trustees of the Kentucky Retirement Systems:

1. Requests that the Co-Chairs of the PPOB appoint members of the PPOB to attend, on a regular basis, meetings of the Kentucky Retirement Systems Board of Trustees and its various standing committees, including the following: Investment Committee; Audit Committee; Retiree Health Plan Committee; Human Resources Committee; Legislative & Budget Committee

Approved this 3rd day of December 2015 by a vote of the members of the Kentucky Retirement Systems Board of Trustees taken in public session at its regular quarterly meeting.

The Kentucky Retirement Systems Board of Trustees hereby directs staff to transmit a copy of this Resolution 3-2015 to the Co-Chairs of the Public Pension Oversight Board.

KENTUCKY RETIREMENT SYSTEMS BOARD OF TRUSTEES

By: Thomas K. Elliott
Thomas K. Elliott, Chair



KENTUCKY RETIREMENT SYSTEMS

William A. Thielen, Executive Director

Perimeter Park West ▾ 1260 Louisville Road ▾ Frankfort, Kentucky 40601
kyret.ky.gov ▾ Phone: 502-696-8800 ▾ Fax: 502-696-8822



KENTUCKY RETIREMENT SYSTEMS BOARD OF TRUSTEES

Resolution No. 4-2015

A RESOLUTION CONCERNING THE FUNDING OF THE KENTUCKY EMPLOYEES RETIREMENT SYSTEM NONHAZARDOUS AND THE STATE POLICE RETIREMENT PLANS FOR FISCAL YEARS 2017 AND 2018

Whereas the Kentucky Retirement Systems Board of Trustees at its December 3, 2015 quarterly meeting voted to reduce the assumed rate of return on investments for the Kentucky Employees Retirement System (KERS) nonhazardous plan and the State Police Retirement System (SPRS) plan from 7.5% to 6.75%; and

Whereas the reduction of the assumed rate of return on investments for the KERS nonhazardous and SPRS plans was based on the recent adoption of an asset allocation recommendation made by RV Kuhns, Kentucky Retirement Systems' general investment consultant, as a result of a comprehensive asset allocation study; and

Whereas the asset allocation recommended by RV Kuhns and adopted by the Kentucky Retirement Systems Board of Trustees is expected to result in a return on the investment of funds by these two plans of less than the current 7.5% assumed rate; and

Whereas the reduction of the assumed rate of return on investments for the KERS nonhazardous and SPRS plans effective July 1, 2015 will be utilized in the annual valuation conducted as of June 30, 2016, and will have the effect of increasing the actuarially required employer contribution rate for fiscal year 2018; and

Whereas if the reduced rate of return on investments for the KERS nonhazardous and SPRS plans had been used in the annual valuation just completed for the June 30, 2015 fiscal year the total actuarially required contribution rate (ARC) for the KERS nonhazardous plan for fiscal year 2017 year would be 48.59% of payroll rather than 47.28% and the ARC for the SPRS plan for fiscal year 2017 would be 89.21% of payroll rather than 85.34%.

Be it Resolved, that the Board of Trustees of the Kentucky Retirement Systems:

1. hereby conveys this funding information to the Governor and General Assembly of the Commonwealth for their consideration in developing Commonwealth's biennial budget for the 2017 and 2018 fiscal years.

Approved this 3rd day of December 2015 by a vote of the members of the Kentucky Retirement Systems Board of Trustees taken in public session at its regular quarterly meeting.

The Kentucky Retirement Systems Board of Trustees hereby directs staff to transmit a copy of this Resolution 4-2015 to the Governor of Kentucky, the members of the Kentucky General Assembly and to the State Budget Director.

KENTUCKY RETIREMENT SYSTEMS BOARD OF TRUSTEES

By: 
Thomas K. Elliott, Chair