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**Report on the Annual Valuation of the
County Employees 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 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.

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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 cursive script that reads 'Todd B. Green' followed by a horizontal line.

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

A handwritten signature in cursive script that reads 'Alisa Bennett'.

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

TBG/AB:kc



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**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

- 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

- 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	12.26%
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	3.14%
(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 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

Only Insurance Benefits Schedule of Employer Contributions is required under GASB 67, which replaced GASB 27.



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>\$ 5,115,755,686</u>	 <u>\$ 4,963,609,447</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>\$ 5,115,755,686</u>	 <u>\$ 4,963,609,447</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)	(2)	(3)	Actuarial Value of Assets	(1)	(2)	(3)
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed Portion)				
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)	(2)	(3)	Actuarial Value of Assets	(1)	(2)	(3)
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed Portion)				
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	415,069,829	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	(25,695,263)	(44,163,869)				
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	68,333,580	103,419,725	(88,282,845)	33,352,842	90,813,474	(77,214,569)
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	(8,220,545)	(14,240,230)				
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	20,921,839	34,158,058	(31,969,450)	8,909,239	29,602,879	(24,510,893)
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	(7,387,530)	(13,082,126)				
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	12,929,625	37,275,522	(36,271,277)	6,696,406	20,883,931	(22,193,923)
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	(274,766)	(339,023)				
D4. Investment Expenses	(4,075,256)	(7,175,588)				
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	5,685,665	18,338,164	(18,373,572)	3,554,157	11,080,227	(12,030,438)
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 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.

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).

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 monthly 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):

Normal Retirement Age 65 for non-hazardous members and 60 for hazardous members.

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

Age Requirement None
Service Requirement 60 months.
Amount 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):

<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.
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<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.
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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
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>Number</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
			<u>Annual Allowances*</u>			
% 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
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	
Basic Form	12	\$ 5,344.03	35	\$ 29,165.73	\$ 34,509.76
Straight Life (Old Plan)	0	0.00	0	0.00	0.00
Joint & Survivor					
100% to Beneficiary	17	9,056.18	213	269,539.76	278,595.94
66-2/3% to Beneficiary	3	687.67	52	75,076.90	75,764.57
50% to Beneficiary	7	4,462.32	61	59,273.71	63,736.03
Pop-up Option	30	20,236.46	232	368,500.49	388,736.95
10 Years Certain	14	8,785.30	19	16,403.44	25,188.74
10 Years Certain & Life	4	1,629.00	3	1,665.29	3,294.29
Social Security Option					
Age 62 Basic	0	0.00	1	310.13	310.13
Age 62 Survivorship	0	0.00	100	160,392.84	160,392.84
Partial Deferred (Old Plan)	0	0.00	0	0.00	0.00
Widows Age 60	0	0.00	3	3,287.07	3,287.07
Dependent Child	0	0.00	0	0.00	0.00
Refund	5	1,437.03	15	8,001.28	9,438.31
15 Years Certain & Life	3	1,094.65	2	295.12	1,389.77
20 Years Certain & Life	3	1,090.53	12	11,197.02	12,287.55
5 Years Certain	2	3,185.15	3	5,130.68	8,315.83
PLSO 12 Month Basic	0	0.00	1	2,192.42	2,192.42
PLSO 24 Month Basic	0	0.00	1	1,466.49	1,466.49
PLSO 36 Month Basic	2	561.73	3	1,618.98	2,180.71
PLSO 12 Month Survivor	0	0.00	5	3,581.07	3,581.07
PLSO 24 Month Survivor	1	1,294.71	10	8,031.87	9,326.58
PLSO 36 Month Survivor	5	2,056.47	29	24,030.26	26,086.73
Total	108	\$ 60,921.23	800	\$ 1,049,160.55	\$ 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 Avg Pay	98 \$11,967								98 \$11,967
20-24 Avg Pay	2,088 \$18,730	14 \$22,153							2,102 \$18,753
25-29 Avg Pay	3,834 \$22,930	692 \$32,180	15 \$27,766						4,541 \$24,356
30-34 Avg Pay	3,742 \$22,798	1,604 \$32,997	558 \$36,868	23 \$42,832					5,927 \$26,961
35-39 Avg Pay	3,925 \$22,108	1,881 \$31,219	1,339 \$37,137	528 \$41,252	17 \$48,148			1 \$18,871	7,691 \$28,324
40-44 Avg Pay	3,822 \$22,108	2,390 \$28,323	1,802 \$33,909	1,223 \$42,125	352 \$47,285	11 \$46,672	12 \$69,083	1 \$89,526	9,613 \$29,428
44-49 Avg Pay	3,429 \$22,896	2,646 \$27,608	2,411 \$30,536	1,816 \$36,077	790 \$45,359	160 \$47,870	80 \$55,952	27 \$61,686	11,359 \$29,962
50-54 Avg Pay	3,055 \$23,214	2,541 \$28,235	2,820 \$29,042	2,679 \$31,388	1,245 \$37,912	352 \$47,537	209 \$49,162	145 \$55,701	13,046 \$29,966
55-59 Avg Pay	2,544 \$22,637	2,156 \$27,135	2,354 \$29,929	2,609 \$30,294	1,750 \$34,687	382 \$41,587	261 \$46,518	178 \$58,828	12,234 \$29,817
60-64 Avg Pay	1,859 \$21,041	1,675 \$27,448	1,654 \$30,172	1,632 \$31,396	1,299 \$32,809	304 \$38,304	214 \$39,861	156 \$55,156	8,793 \$29,300
65-69 Avg Pay	897 \$17,397	797 \$22,645	716 \$27,360	570 \$28,696	364 \$31,011	106 \$34,002	111 \$38,026	82 \$46,585	3,643 \$25,400
70 & over Avg Pay	395 \$14,824	446 \$19,220	410 \$22,115	275 \$24,530	135 \$26,517	39 \$33,412	45 \$33,136	60 \$36,160	1,805 \$21,487
Totals Avg Pay	29,688 \$21,974	16,842 \$28,371	14,079 \$30,993	11,355 \$33,225	5,952 \$36,742	1,354 \$42,351	932 \$45,025	650 \$63,717	80,852 \$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	269	1		1							271	\$34,272
20-24 Avg Pay	\$34,105	\$39,726		\$73,857							1,259	\$42,386
25-29 Avg Pay	1,019	239	1								1,607	\$48,979
30-34 Avg Pay	\$41,001	\$48,275	\$46,715								1,680	\$53,198
35-39 Avg Pay	587	779	234	7							1,856	\$58,127
40-44 Avg Pay	\$43,325	\$51,350	\$54,979	\$58,583							1,276	\$58,372
44-49 Avg Pay	262	464	686	262	6						716	\$58,806
50-54 Avg Pay	\$42,018	\$50,255	\$56,089	\$61,881	\$59,138						308	\$57,297
55-59 Avg Pay	132	283	518	752	158	3	10				154	\$54,821
60-64 Avg Pay	\$41,092	\$49,799	\$55,308	\$63,631	\$68,667	\$57,583	\$84,366				29	\$48,344
65-69 Avg Pay	105	157	279	415	235	50	28	7			16	\$59,071
70 & over Avg Pay	\$37,950	\$48,680	\$54,060	\$59,763	\$70,386	\$76,060	\$71,698	\$88,369				
Totals	2,457	2,100	1,967	1,743	611	139	91	64				
Avg Pay	\$40,684	\$49,915	\$54,847	\$61,472	\$67,985	\$73,213	\$73,948	\$84,129				



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
Actuarial Value of Assets	<u>2,096,782,956</u>	<u>2,096,782,956</u>
Unfunded Liability	\$ 1,516,524,591	\$ 1,606,298,656
Funded Ratio	58.03%	55.22%
Contribution Rate	21.71%	24.69%
Discount Rate	7.50%	7.00%
Payroll Growth	4.00%	3.50%
Inflation Rate	3.25%	2.75%
Insurance		
Actuarial Accrued Liability	\$ 1,504,015,233	\$ 1,507,652,574
Actuarial Value of Assets	<u>1,087,707,118</u>	<u>1,087,707,118</u>
Unfunded Liability	\$ 416,308,115	\$ 423,800,510
Funded Ratio	72.32%	71.96%
Contribution Rate	9.79%	10.02%
Discount Rate	7.50%	7.00%
Payroll Growth	4.00%	3.50%
Inflation Rate	3.25%	2.75%
CERS Hazardous Total		
Actuarial Accrued Liability	\$ 5,117,322,780	\$ 5,210,734,186
Actuarial Value of Assets	<u>3,184,490,074</u>	<u>3,184,490,074</u>
Unfunded Liability	\$ 1,932,832,706	\$ 2,026,244,112
Funded Ratio	62.23%	59.99%
Contribution Rate	31.50%	34.71%
Discount Rate	7.50%	7.00%
Payroll Growth	4.00%	3.50%
Inflation Rate	3.25%	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%



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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

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