Board Meeting - November 14, 2019 (November 14, 2019)

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KENTUCKY RETIREMENT SYSTEMS
Board of Trustees
Regular Quarterly Meeting
November 14, 2019 at 10:00 A.M., ET
1270 Louisville Road, Frankfort, Kentucky 40601

1. Roll Call
2. Approval of Minutes* – September 12, 2019
3. Public Comment
4. Draft 2019 Actuarial Valuations; Janie Shaw and Danny White (GRS)
    - Overview
    - KERS
    - CERS
    - SPRS
5. Retiree Health Plan Committee Report – David Rich/Connie Pettyjohn
6. Investment Committee Report and Recommendations* - Dave Harris/Rich Robben
7. Audit Committee Report*– November 7, 2019; John Chilton/Kristen Coffey/Rebecca Adkins
    - Hazardous Duty Positions
    - Financial Statements
8. PPW New Lease Rate Approval* – Rebecca Adkins
9. Legislative Committee Update* – David Eager/Betty Pendergrass
10. Legislative Update* - David Eager, Alan Hurst
    - Housekeeping Bill
    - Level Dollar Funding – BR 292
    - HB 1 Cessation Regulation Approval
11. Other Business - David Eager
    - Reply to the Special Audit
    - CERS Separation
    - Retirement Trends
    - Staffing Update
    - Trustee Education
    - Trustee Per Diem and Reimbursement Policy
    - Board Policies
    - Other
12. Closed Session [Pending Litigation KRS 61.810(1)(c)]
13. Adjourn

**Board Action Required*

MINUTES OF MEETING #424
BOARD OF TRUSTEES KENTUCKY RETIREMENT SYSTEMS
QUARTERLY MEETING SEPTEMBER 12, 2019 AT 10:00A.M.
1270 LOUISVILLE ROAD, FRANKFORT, KENTUCKY 40601

At the Quarterly Meeting of the Board of Trustees held on September 12, 2019 the following members were present: David Harris (Chair), Joe Brothers, John Chilton, Raymond Connell, Kelly Downard, Sherry Kremer, Matthew Monteiro, Keith Peercy, Betty Pendergrass, Jerry Powell, David Rich and Sec. Thomas Stephens. Staff members present were David Eager, Rebecca Adkins, Erin Surratt, Kathy Rupinen, Vicki Hale, Alan Hurst, D'Juan Surratt, Connie Davis, Connie Pettyjohn, Rich Robben, Elizabeth Smith, Joe C. Gilbert, Anne Baker, Kristen Coffey, Shawn Sparks and Alane Foley. Also present were Larry Totten, Michele Hill, Jim Carroll, Larry Loew, Carla Whaley, Teresa Sanders, and Tracey Garrison.

***

Mr. Harris called the meeting to order.
Ms. Alane Foley called roll.

***

Mr. Harris introduced agenda item *Approval of Minutes- May 16, 2019.* A motion was made by Sec. Stephens and was seconded by Ms. Pendergrass to approve the minutes as presented. The motion passed unanimously.

***

Mr. Harris introduced agenda item *Public Comment*. Mr. Jim Carroll spoke to the Board Members regarding HB 1.

***

Mr. Harris introduced agenda item *Retiree Health Plan Committee Report*. Ms. Connie Pettyjohn provided an update to the Board from the last Retiree Health Plan Committee meeting. Mr. Connell moved and was seconded by Ms. Kremer to ratify the recommendations of the Retiree Health Plan Committee regarding health plans for non medicare-eligible and medicare-eligible retirees with a verb amendment. The motion passed unanimously.

***

Mr. Harris introduced agenda item *Investment Committee and Portfolio Update*. Mr. Robben provided details to the Board regarding investment performance and staff activities. Mr. Powell moved and was seconded by Mr. Rich to ratify the actions of the Investment Committee as presented. The motion passed unanimously.

***

Mr. Harris introduced agenda item *Audit Committee Report*. Mr. D'Juan Surratt reviewed *Hazardous Duty Position* requests with the Board. Mr. Brothers moved and was seconded by Mr. Downard to approve hazardous duty coverage as presented. The motion passed unanimously.

Ms. Kristen Coffey reviewed the Audit Committee Charter with the Board. Mr. Brothers moved and was seconded by Mr. Connell to accept the Audit Committee Charter as presented. The motion passed unanimously.

Ms. Rebecca Adkins provided an overview of the financial statements. This was presented for informational purposes only.

***

Mr. Harris introduced agenda item *Legislative Issues.* Mr. Eager provided updates on the following: HB 1, fixed allocation funding, 2020 general assembly, APA special audit, and processes for KRS staff to work with Board Members on legislative issues.

***

Mr. Harris called for a short recess.

Mr. Harris called the meeting to order and introduced agenda item *Document Process and Storage.* Ms. Anne Baker provided an educational presentation on KRS document process and storage procedures.

***

A motion was made by Mr. Rich and seconded by Mr. Downard to go in to closed session. The motion passed unanimously.

Mr. Harris read the following statement and the meeting moved into closed session: A motion having been made in open session to move into closed session for a specific purpose, and such motion having carried by majority vote in open, public session, the Board shall now enter closed session to consider litigation, pursuant to KRS 61.810(1)(c), because of the necessity of protecting the confidentiality of the Systems' litigation strategy and preserving any available attorney-client privilege. All public attendees exited the meeting.

The meeting was called back into open session. No action was taken.

***

There being no further business, a motion was made at 1:25 p.m. by Mr. Powell and seconded by Ms. Pendergrass to adjourn the meeting, to meet again on November 14, 2019 or upon the call of the Executive Director or the Chair of the Board of Trustees. The motion passed unanimously.

***

Copies of all documents presented are incorporated as part of the Minutes of the Board of Trustees held September 12 2019, except documents provided during a closed session conducted pursuant to the open meetings act and exempt under the open records act.

CERTIFICATION

I do certify that I was present at this meeting, and I have recorded the above actions of the Directors on the various items considered by it at this meeting. Further, I certify that all requirements of KRS 61.805-61.850 were met in conjunction with this meeting.

Recording Secretary

We, the Chair of the Board of Directors of the Kentucky Retirement Systems and Executive Director of the Kentucky Retirement Systems, do certify that the Minutes of Meeting Number 424, held on September 12, 2019, were approved on November 14, 2019.

Chair of the Board of Directors

Executive Director

I have reviewed the Minutes of the September 12, 2019 Board of Trustees Meeting for content, form, and legality.

Executive Director
Office of Legal Services

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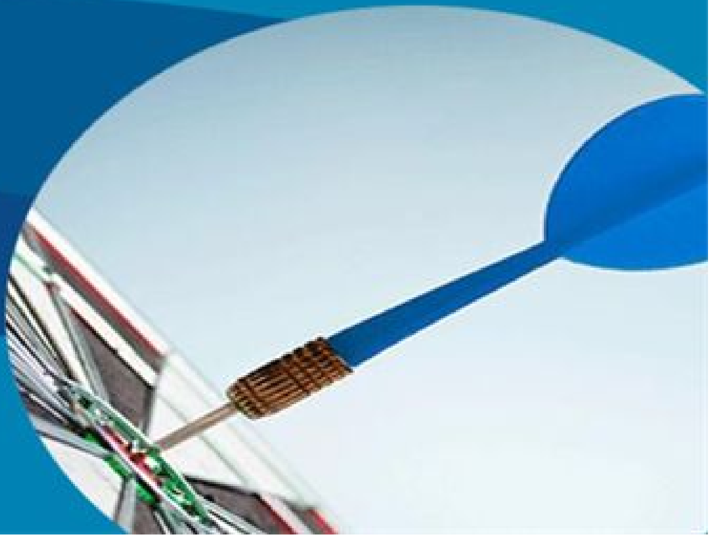
5.1

Kentucky Retirement Systems

2019 Actuarial Valuation Results
November 14, 2019

Janie Shaw, ASA, MAAA
Danny White, FSA, EA, MAAA



Agenda

- Summary of Valuation Results
  - Comments on valuation results
  - Demographic experience
  - Contribution rates and funded status
- Projection Information for Pension and Insurance
  - Unfunded liability and funded ratio
  - Contribution dollars and rate of pay
- Closing Comments on 2019 Valuation Results

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Comment on KERS Non-Haz Retirement Fund

- Imperative to maintain or increase contribution effort for the KERS Non-Hazardous Retirement Fund
  - June 30, 2019 assets were $2,234 million
  - Benefit payments for the 2019 fiscal year were $1,001 million
  - Expected FY 2020 employer and member contributions are $996 million
    - Expected contributions $97 million less due to enactment of HB 1 during the 2019 special session

GRS Retirement Consulting

Comments on Valuation Results

- Valuation results include new assumptions that were adopted by the Board in April 2019
- FY 2019 investment experience
  - 5.0% to 5.8% return (varies by fund)
    - Assumed rate of return is 5.25% for KERS Non-Haz and SPRS retirement funds and 6.25% for all other funds)
  - Net $89 million less in plan assets than expected ($52 million for pension and $37 million for insurance funds)
- Change in active membership and covered payroll
  - Active membership declined in all funds except CERS Haz
  - Covered payroll decreased in both KERS Systems and the SPRS
  - Covered payroll increased by 2.2% and 4.8% for CERS Non-Haz and Haz, respectively

GRS Retirement Consulting

Comments on Valuation Results (continued)

- Retirement fund liability experience
  - $1,801 million increase in liability for all retirement funds combined due to assumption changes (4.2% to 5.6% increase in liability)
  - Additional $354 million loss for all retirement funds combined (0.0% to 1.5% increase in liability)
- Insurance fund liability experience
  - Higher than expected Medicare premiums for 2019 resulting in liability losses for the non-hazardous plans
  - Net $105 million liability loss for all insurance funds combined (2.9% decrease to 2.7% increase in liability)
  - $489 million increase in liability due to assumption changes (2.7% to 7.7% increase in liability)

Employer Contribution Rates Comparison

Item	2018 Valuation			2019 Valuation			Current Rate
	Pension	Insurance	Combined	Pension	Insurance	Combined	FY 2020
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KERS Non-Hazardous	74.54%	10.65%	**85.19%**	80.98%	12.03%	**93.01%**	**83.43%**
KERS Hazardous	34.42%	0.00%	**34.42%**	38.71%	0.00%	**38.71%**	**36.85%**
CERS Non-Hazardous	22.52%	4.76%	**27.28%**	26.21%	5.78%	**31.99%**	**24.06%**
CERS Hazardous	36.98%	9.52%	**46.50%**	46.31%	10.47%	**56.78%**	**39.58%**
SPRS	120.54%	19.50%	**140.04%**	136.12%	20.85%	**156.97%**	**146.28%**

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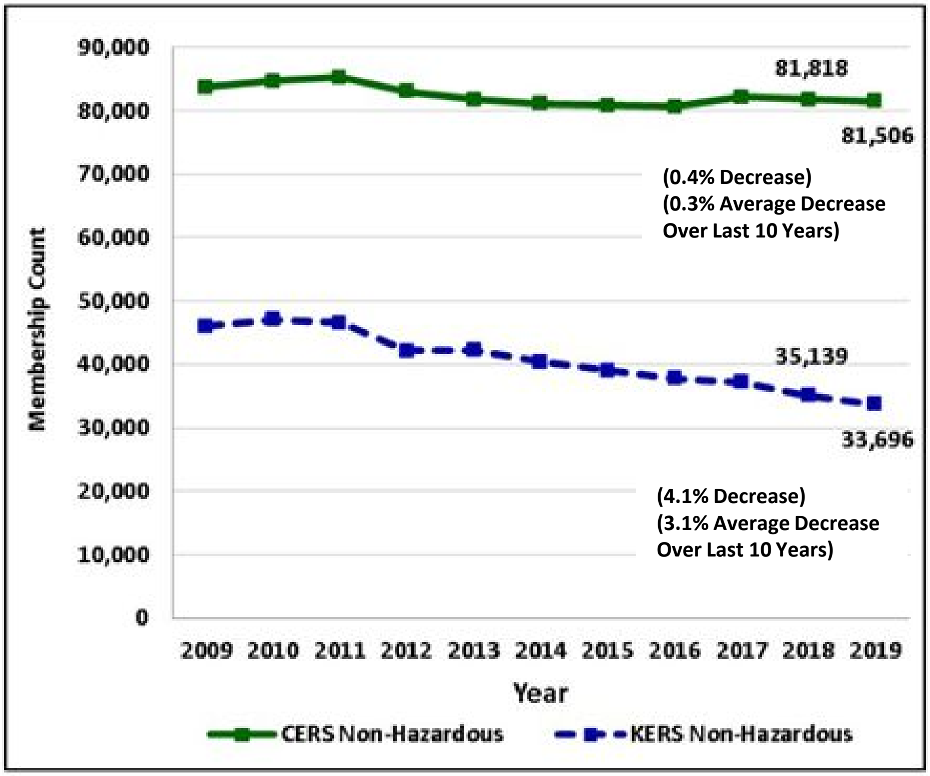
Unfunded Actuarial Accrued Liability – Actuarial Value of Asset Basis ($ in Billions)

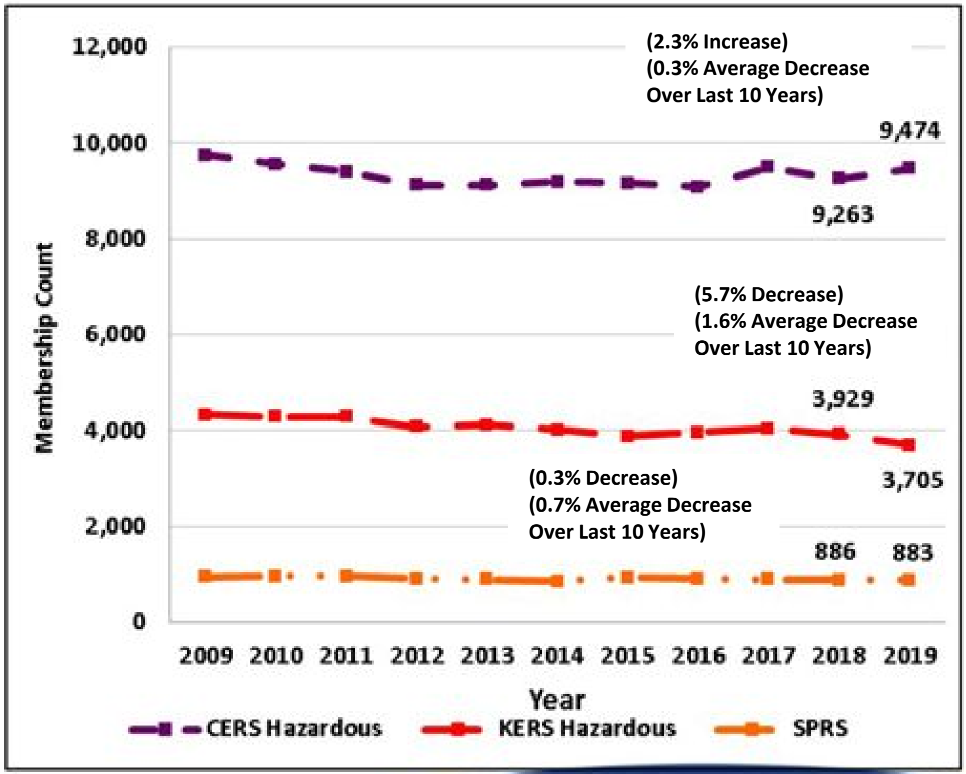
Item	2018 Valuation			2019 Valuation			
	Pension	Insurance	Combined	Pension	Insurance	Combined	Change In UAAL
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KERS Non-Hazardous	$13.66	$1.55	$15.21	$14.26	$1.74	$16.00	**$0.79**
KERS Hazardous	0.51	(0.12)	0.39	0.55	(0.10)	0.45	**$0.06**
CERS Non-Hazardous	6.24	0.72	6.96	7.31	1.04	8.35	**$1.39**
CERS Hazardous	2.47	0.43	2.90	2.87	0.42	3.29	**$0.39**
SPRS	0.72	0.07	0.79	0.76	0.08	0.84	**$0.05**
Total	**$23.60**	**$2.65**	**$26.25**	**$25.75**	**$3.18**	**$28.93**	**$2.68**

Active Membership Count



(0.4% Decrease)
(0.3% Average Decrease
Over Last 10 Years)

(4.1% Decrease)
(3.1% Average Decrease
Over Last 10 Years)

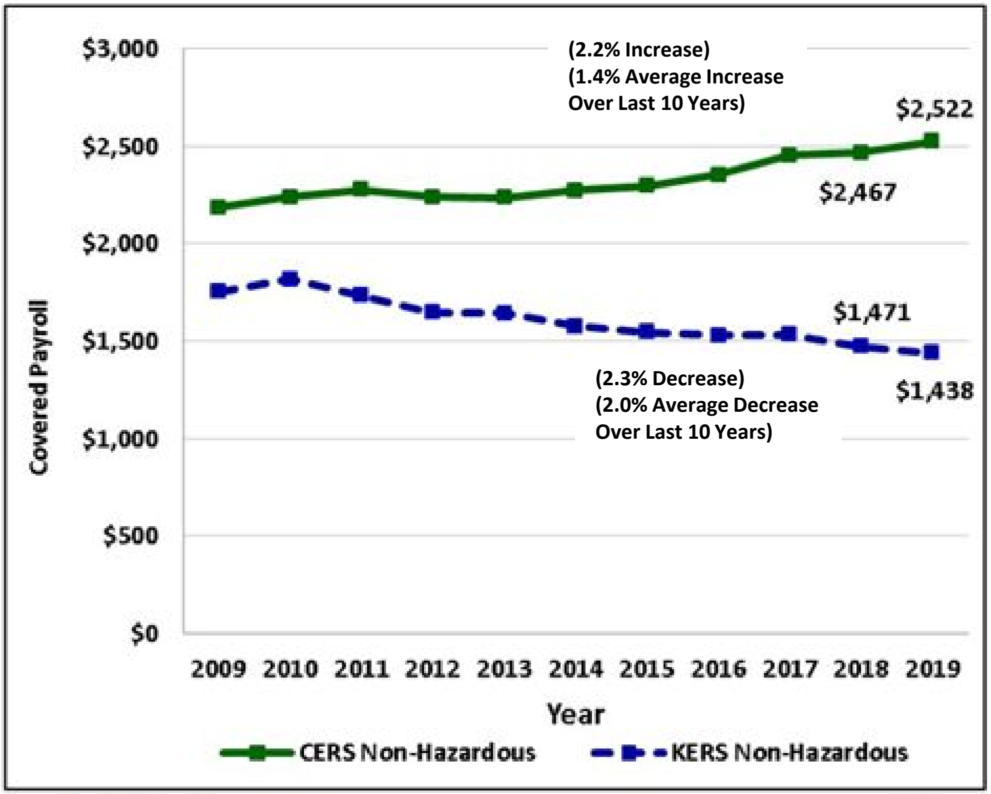


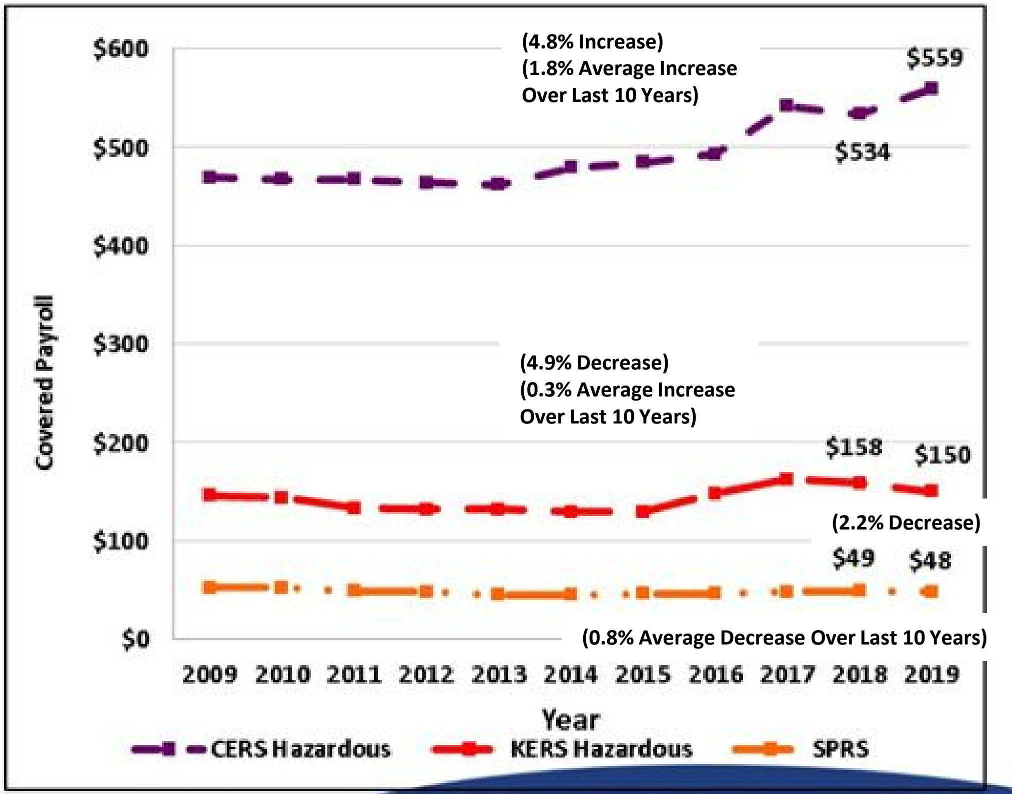
(2.3% Increase)
(0.3% Average Decrease
Over Last 10 Years)

(5.7% Decrease)
(1.6% Average Decrease
Over Last 10 Years)

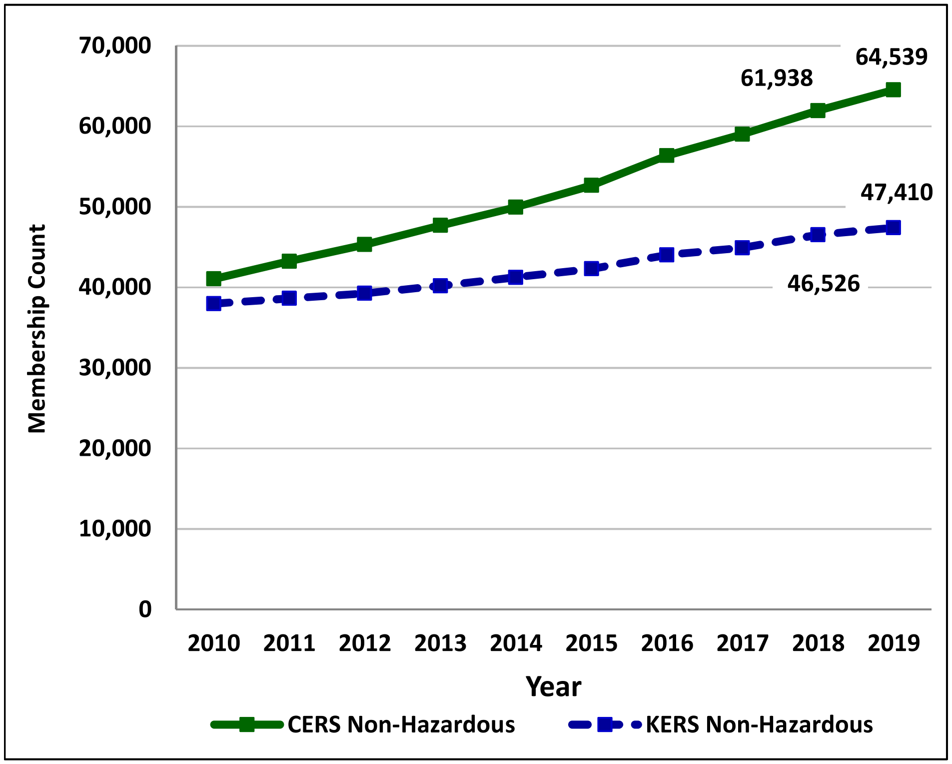
(0.3% Decrease)
(0.7% Average Decrease
Over Last 10 Years)

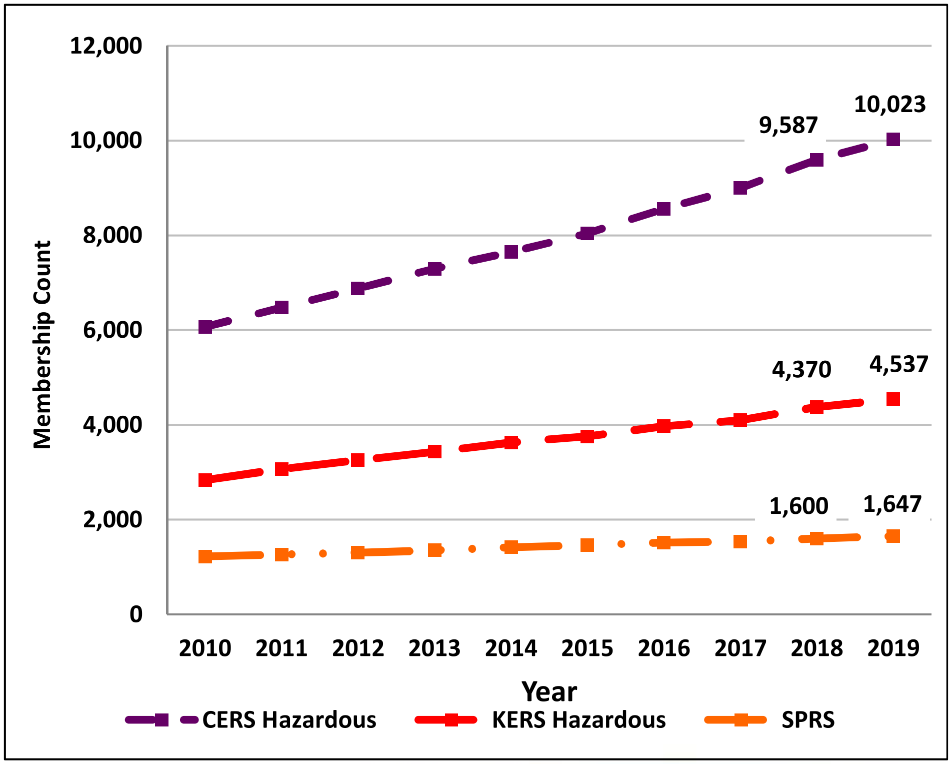
Covered Payroll ($ in Millions)



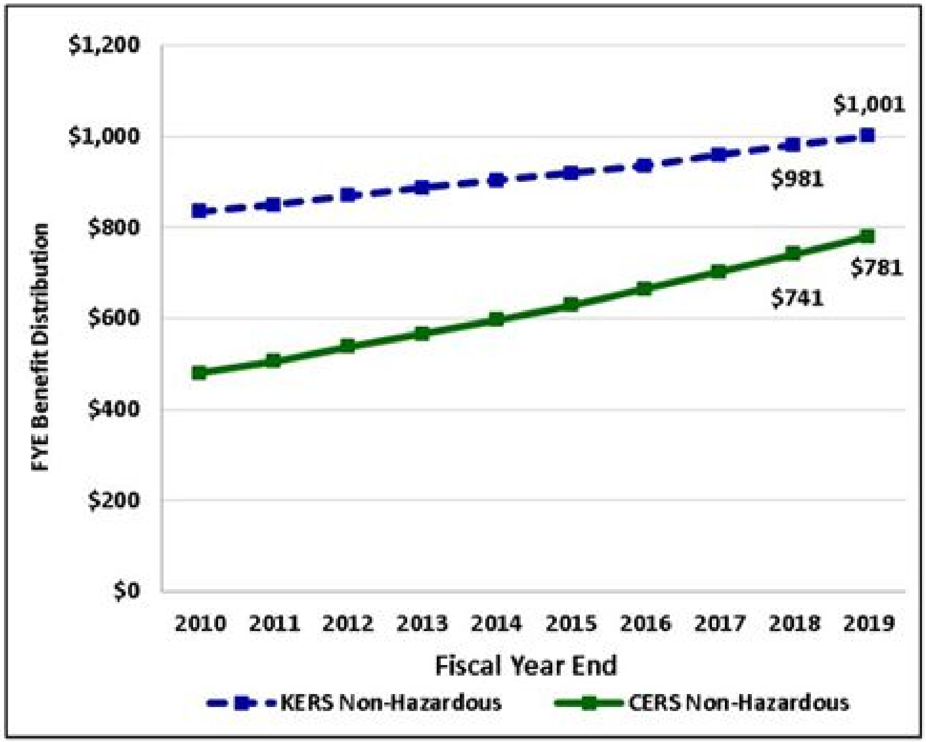


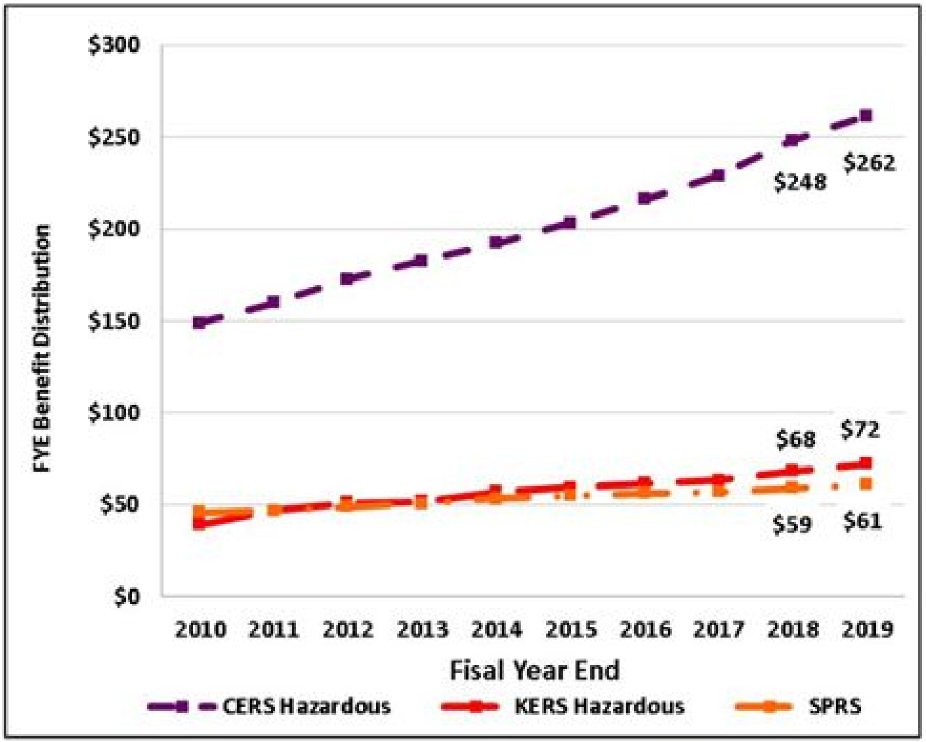
Retired Membership Count





Benefit Distributions ($ in Millions)





Funding Results – KERS ($ in millions)

	NonHazardous System				Hazardous System			
	Pension		Insurance		Pension		Insurance	
Item	2019	2018	2019	2018	2019	2018	2019	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Total Normal Cost Rate	12.18%	12.25%	2.71%	2.83%	16.48%	16.62%	4.92%	5.73%
Member Rate	(5.00%)	(5.00%)	(0.41%)	(0.40%)	(8.00%)	(8.00%)	(0.60%)	(0.58%)
Employer Normal Cost Rate	7.18%	7.25%	2.30%	2.43%	8.48%	8.62%	4.32%	5.15%
Administrative Expenses	0.81%	0.73%	0.06%	0.05%	0.73%	0.62%	0.08%	0.07%
Amortization Cost	72.99%	66.56%	9.67%	8.17%	29.50%	25.18%	(5.47%)	(6.09%)
Total Employer Contribution Rate	**80.98%**	**74.54%**	**12.03%**	**10.65%**	**38.71%**	**34.42%**	**0.00%**	**0.00%**
Actuarial Accrued Liability	$16,466	$15,675	$2,733	$2,436	$1,226	$1,152	$427	$393
Actuarial Value of Assets	2,206	2,019	991	887	672	639	525	511
Unfunded Actuarial Accrued Liability	**$14,260**	**$13,656**	**$1,742**	**$1,548**	**$555**	**$513**	**($99)**	**($118)**
Funded Ratio	**13.4%**	**12.9%**	**36.3%**	**36.4%**	**54.8%**	**55.5%**	**123.1%**	**130.0%**

Funding Results – CERS ($ in millions)

	NonHazardous System				Hazardous System			
	Pension		Insurance		Pension		Insurance	
Item	2019	2018	2019	2018	2019	2018	2019	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Total Normal Cost Rate	10.77%	10.01%	3.40%	3.32%	19.05%	14.07%	5.84%	4.74%
Member Rate	(5.00%)	(5.00%)	(0.49%)	(0.46%)	(8.00%)	(8.00%)	(0.46%)	(0.41%)
Employer Normal Cost Rate	5.77%	5.01%	2.91%	2.86%	11.05%	6.07%	5.38%	4.33%
Administrative Expenses	0.86%	0.79%	0.04%	0.03%	0.31%	0.28%	0.08%	0.07%
Amortization Cost	19.58%	16.72%	2.83%	1.87%	34.95%	30.63%	5.01%	5.12%
Total Employer Contribution Rate	**26.21%**	**22.52%**	**5.78%**	**4.76%**	**46.31%**	**36.98%**	**10.47%**	**9.52%**
Actuarial Accrued Liability	$14,356	$13,191	$3,568	$3,093	$5,245	$4,793	$1,733	$1,684
Actuarial Value of Assets	7,050	6,950	2,523	2,371	2,375	2,322	1,314	1,256
Unfunded Actuarial Accrued Liability	**$7,307**	**$6,241**	**$1,045**	**$721**	**$2,870**	**$2,471**	**$419**	**$428**
Funded Ratio	**49.1%**	**52.7%**	**70.7%**	**76.7%**	**45.3%**	**48.4%**	**75.8%**	**74.6%**

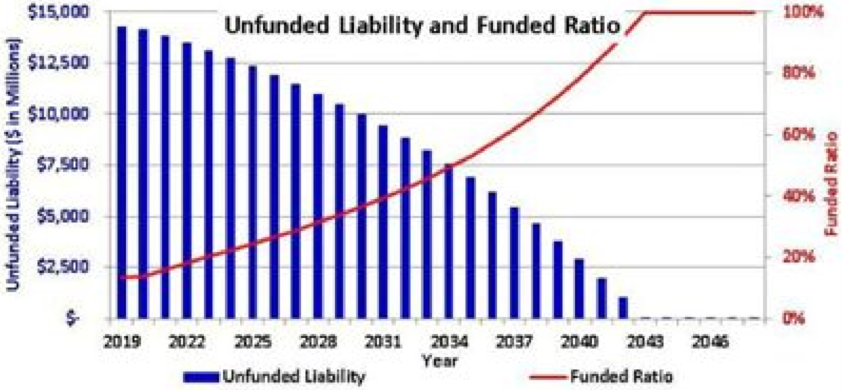
Funding Results – SPRS ($ in millions)

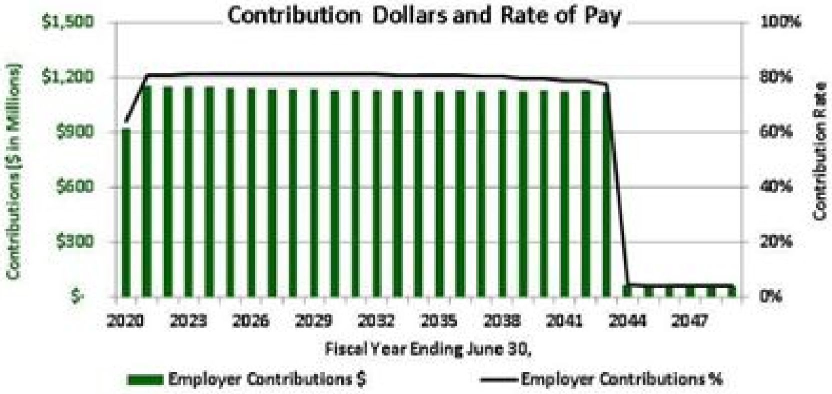
	Pension		Insurance	
Item	2019	2018	2019	2018
(1)	(2)	(3)	(4)	(5)
Total Normal Cost Rate	26.92%	23.41%	8.41%	8.29%
Member Rate	(8.00%)	(8.00%)	(0.40%)	(0.35%)
Employer Normal Cost Rate	18.92%	15.41%	8.01%	7.94%
Administrative Expenses	0.47%	0.40%	0.14%	0.13%
Amortization Cost	116.73%	104.73%	12.70%	11.43%
Total Employer Contribution Rate	**136.12%**	**120.54%**	**20.85%**	**19.50%**
Actuarial Accrued Liability	$1,045	$989	277	262
Actuarial Value of Assets	282	268	197	188
Unfunded Actuarial Accrued Liability	**$763**	**$721**	**$79**	**$74**
Funded Ratio	**27.0%**	**27.1%**	**71.3%**	**71.6%**

Projection Information
Pension and Insurance

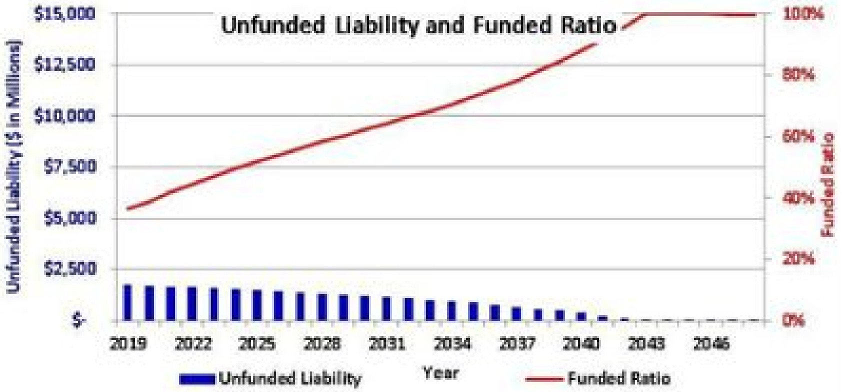
KERS Non-Hazardous

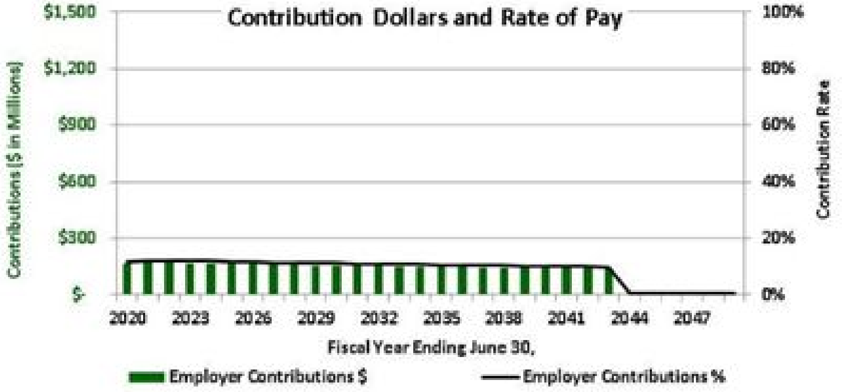
Pension





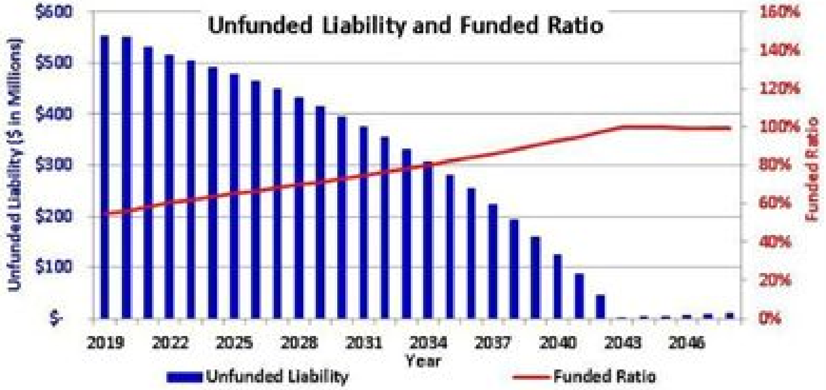
Insurance

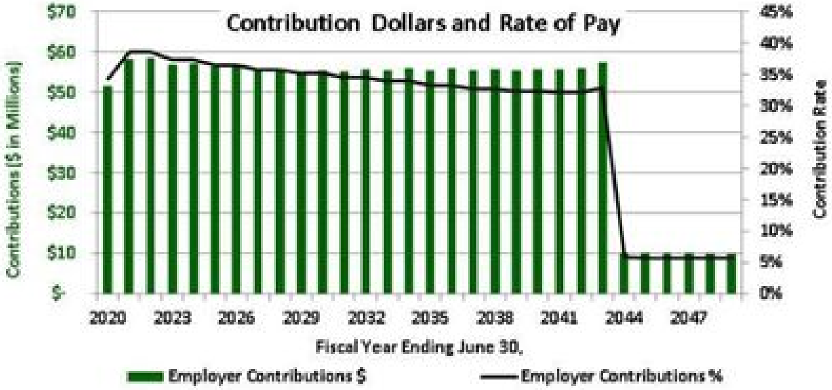




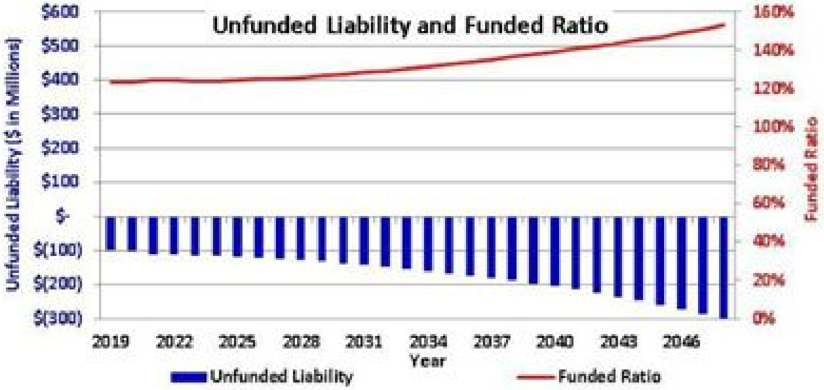
KERS Hazardous

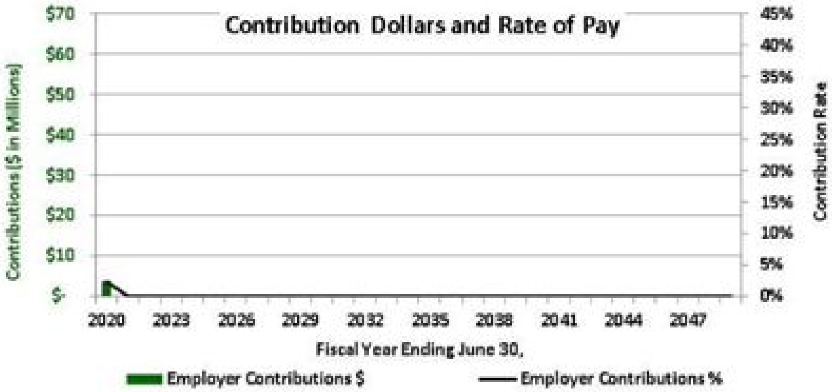
Pension





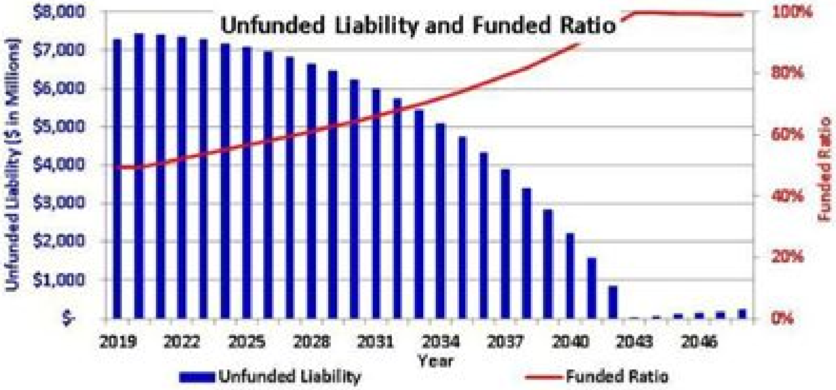
Insurance

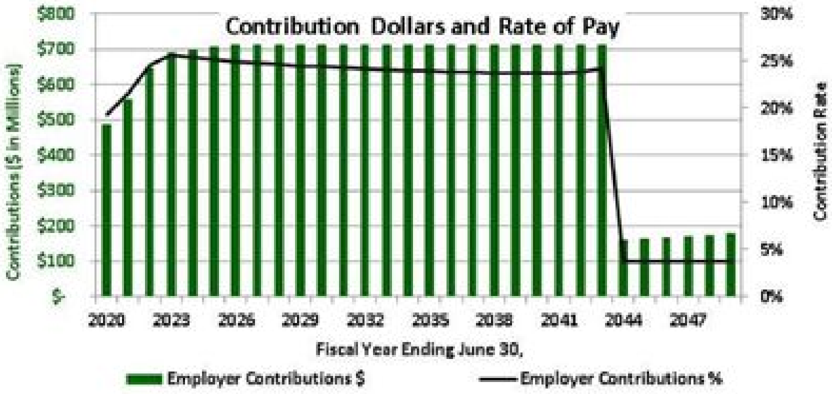




CERS Non-Hazardous

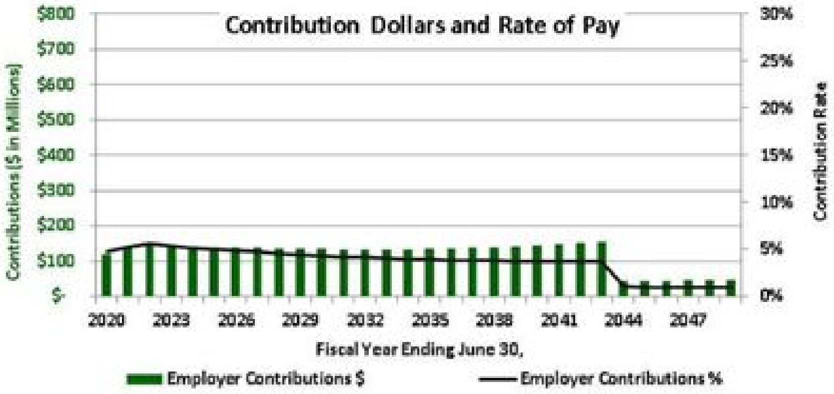
Pension


Unfunded Liability and Funded Ratio


Contribution Dollars and Rate of Pay

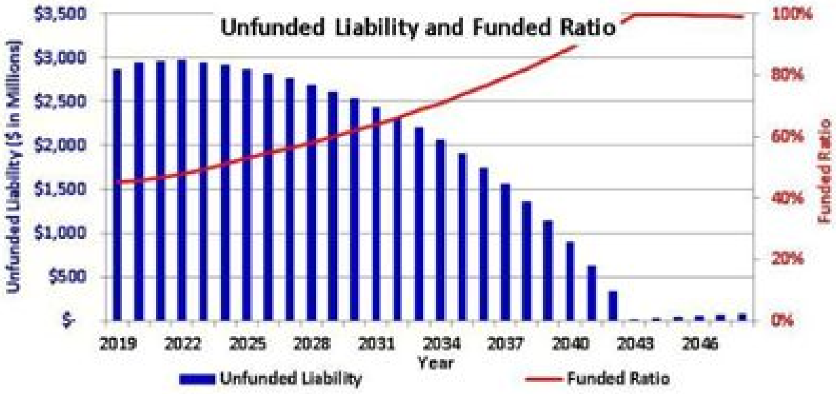
Insurance

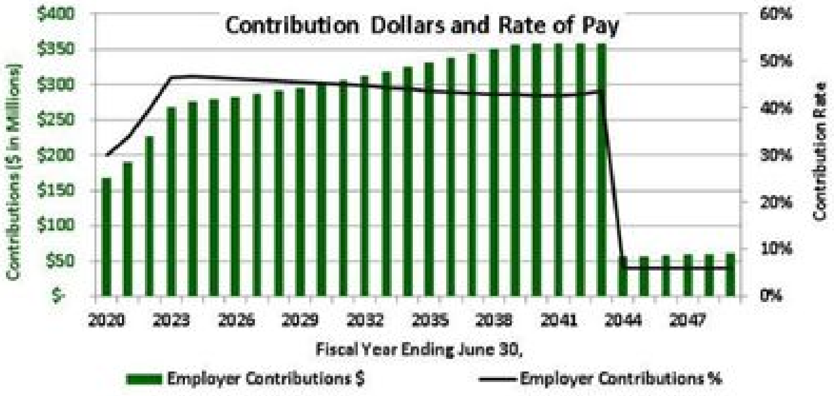

Unfunded Liability and Funded Ratio


Contribution Dollars and Rate of Pay

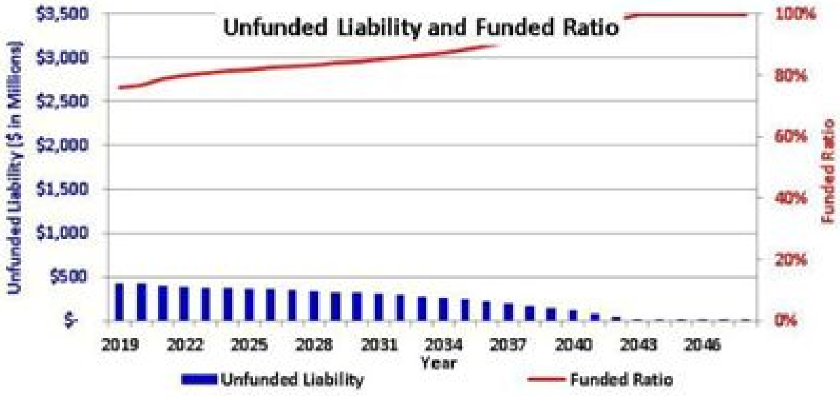
CERS Hazardous

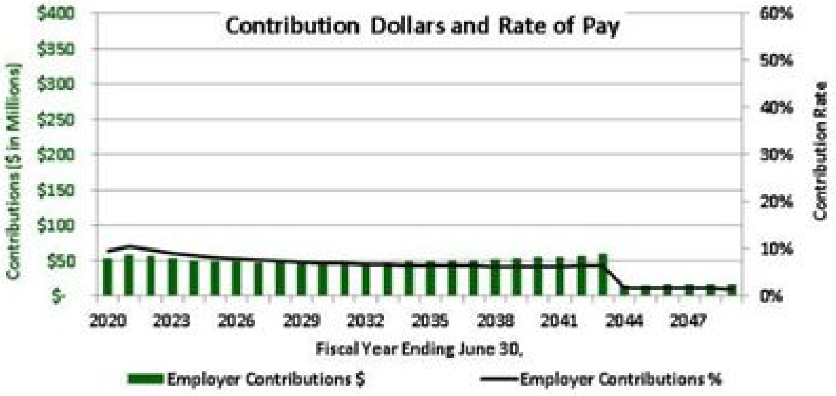
Pension





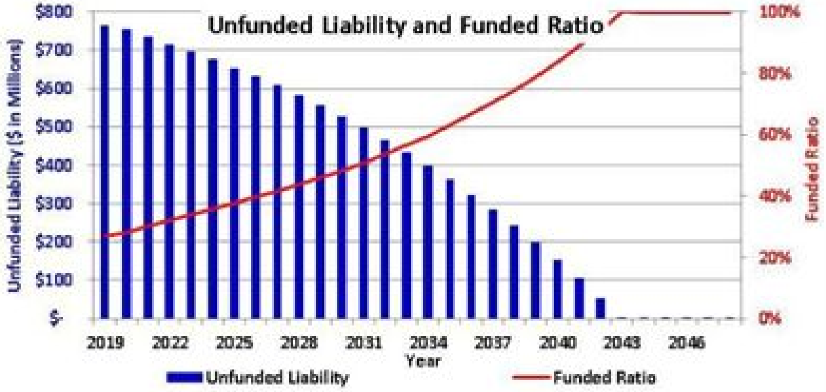
Insurance

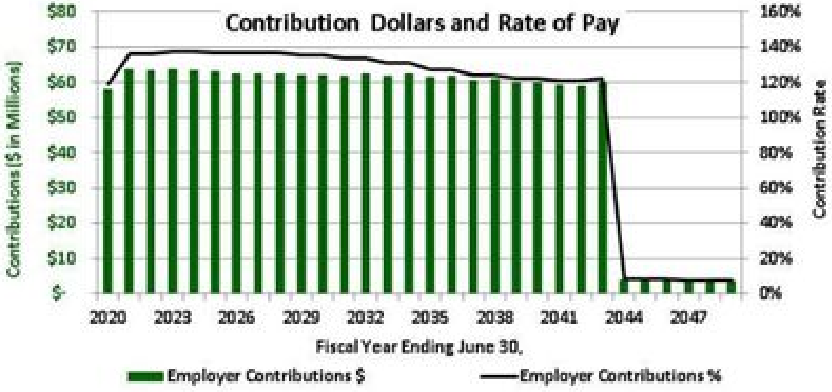




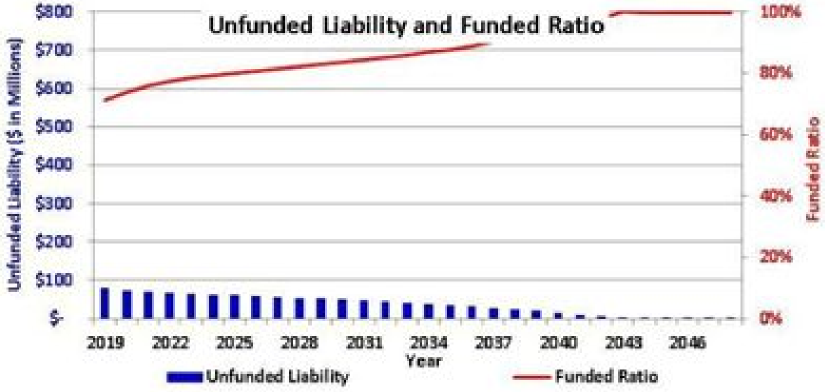
SPRS

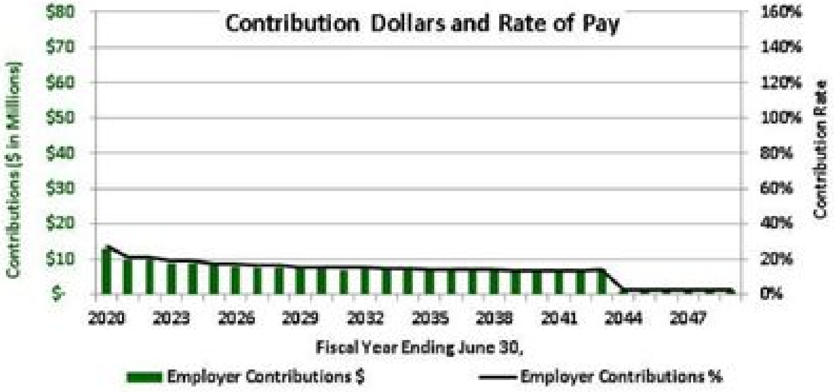
Pension





Insurance





Closing Comments on 2019 Valuation Results

- It is imperative the State and participating employers in the Systems contribute the actuarial determined contribution in each future year to improve the System’s financial security
- We recommend KRS work with the General Assembly for an alternative method to collect the amortization cost from participating employers that is not payroll based
  - Needed most for the KERS Non-Hazardous System
  - Legislative action will be required

Disclaimers

- This presentation is intended to be used in conjunction with the actuarial valuations as of June 30, 2019. This presentation should not be relied on for any purpose other than the purpose described in the valuation report.
- Readers are cautioned to examine original source materials and to consult with subject matter experts before making decisions related to the subject matter of this presentation.
- This presentation shall not be construed to provide tax advice, legal advice or investment advice.

GRS Retirement Consulting

GRS Retirement Consulting

P: 469.524.0000 | F: 469.524.0003 | www.grsconsulting.com

November 6, 2019

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

Subject: **Certification of the June 30, 2019 Actuarial Valuation Results**

Dear Trustees of the Board:

Enclosed are the June 30, 2019 actuarial valuation reports for the Kentucky Employees Retirement System (KERS), the County Employees Retirement System (CERS), and the State Police Retirement System (SPRS). These reports provide the current actuarial and financial condition of the Kentucky Retirement Systems (KRS) and analyze fluctuations in the employer contribution rates since the prior actuarial valuation.

Under Kentucky Statute, the Board must recommend the employer contribution rates for the KERS and SPRS Systems for the fiscal years beginning July 1, 2020 and ending June 30, 2022 and the employer contribution rates for the CERS Systems for the fiscal year beginning July 1, 2020 and ending June 30, 2021. The contribution rates determined by these actuarial valuations are intended to become effective twelve months after the valuation date and, as such, are intended to be used by the Board for recommending the required contribution rates.

These contribution rates are calculated based on the membership data and plan assets as of June 30, 2019. These calculations are also based on the benefit provisions in effect as of June 30, 2019. If new legislation is enacted between the valuation date and the date the contribution rates become effective, the Board may adjust the calculated rates for CERS to reflect this new legislation. Such adjustments are based on information supplied by the actuary.

FINANCING OBJECTIVES AND FUNDING POLICY

KRS administers pension and health insurance funds to provide for monthly retirement income and retiree health insurance benefits. The total employer contribution rate is comprised of a contribution to each respective fund.

The contribution rate for each fund consists of a normal cost that is net of employee contributions and an amortization payment on the unfunded actuarial accrued liability (UAAL). In accordance with Section 61.565 of Kentucky Statute, the amortization payment is based on a closed thirty-year amortization period beginning July 1, 2013. As a result, the amortization period used in the 2019 actuarial valuation is 24 years. The amortization period used in subsequent actuarial valuations will decrease by one each future year.

PROGRESS TOWARDS REALIZATION OF FUNDING OBJECTIVES

One way to measure the progress towards achieving the intended funding objective is to measure the relationship between the actuarial value of assets and the actuarial accrued liabilities for each fund. This relationship is referred to as the funded ratio and should increase over time (absent of benefit improvements) with the goal of attaining 100%.

Table 1 shown below provides a comparison of the change in funded ratio from June 30, 2018 to June 30, 2019 for the retirement funds of each System. As the table shows, the funded ratio for the KERS Hazardous fund, both CERS funds, and the SPRS fund decreased since the prior year. These decreases are mainly due to the updated actuarial assumptions adopted by the Board as a result of the experience study conducted after the June 30, 2018 valuation. Additionally, the full actuarially determined contribution rates for both CERS funds were not paid in FY2018-19 (due to the contribution phase-in provisions from House Bill 362 passed during the 2018 legislative session), which further decreased the funded ratio for these funds. The improvement in the financial health of these retirement systems is very dependent on the Retirement System and the Commonwealth maintaining a sound funding policy and the participating employers paying the actuarially determined contribution rates on the payroll of their employees.

For FY 2018-19, the KERS non-hazardous retirement system distributed $1,012 million in benefit payments and administrative expenses, and received $1,129 million in employer and employee contributions (excluding contributions to the 401(h) account). As of June 30, 2019, plan assets for this system were $2,234 million (excluding assets in the 401(h) account). To stabilize the financial condition of this system and reduce the likelihood that plan assets will become exhausted, it is imperative that contributions to the system continue to exceed the benefit payments. If the entire actuarially determined employer contribution documented in this letter is not made to this system in FY 2020-21 and FY 2021-22, the financial condition of this retirement system is expected to deteriorate and there is a significant risk of the plan assets being exhausted.

Table 1. Change in the Funded Ratio (AVA / AAL)
from June 30, 2018 to June 30, 2019 for the Retirement Funds

	Funded Ratio – Retirement Funds	
System	June 20, 2018	June 30, 2019
KERS Non-Hazardous	12.9%	13.4%
KERS Hazardous	55.5%	54.8%
CERS Non-Hazardous	52.7%	49.1%
CERS Hazardous	48.4%	45.3%
SPRS	27.1%	27.0%

Table 2 shown below provides a similar comparison of the change in funded ratio for the insurance funds. As the table shows, the funded ratio for the KERS Hazardous fund and the CERS Non-Hazardous fund experienced relatively larger decreases. The decreases for these funds are mainly due to the updated actuarial assumptions adopted by the Board as a result of the experience study conducted after the June 30, 2018 valuation. The updated actuarial assumptions decreased the funded ratio for the other funds, as well; however, other demographic experience offset this decrease so that the funded ratio stayed relatively stable for the KERS Non-Hazardous, CERS Hazardous, and SPRS funds.

**Table 2. Change in the Funded Ratio (AVA / AAL)
from June 30, 2018 to June 30, 2019 for the Insurance Funds**

	Funded Ratio – Insurance Funds	
System	June 30, 2018	June 30, 2019
KERS Non-Hazardous	36.4%	36.3%
KERS Hazardous	130.0%	123.1%
CERS Non-Hazardous	76.7%	70.7%
CERS Hazardous	74.6%	75.8%
SPRS	71.6%	71.3%

SUMMARY OF CHANGE IN CONTRIBUTION RATES SINCE THE PRIOR VALUATION

The following tables provide a comparison of the actuarially determined contribution rates determined by the June 30, 2018 actuarial valuation, the certified contribution rates that are in effect for the fiscal year ending June 30, 2020, and the actuarially determined contribution rates determined by the June 30, 2019 actuarial valuation. The table also provides the recommended contribution rates for fiscal year ending June 30, 2021.

Table 3. Comparison of the Contribution Rates (Retirement and Insurance)

System	2018 Valuation Calculated Rates	Effective for FY2019-20	2019 Valuation Calculated Rates	Recommend for FY2020-21
KERS Non-Hazardous	85.19%	83.43%[1]	93.01%	93.01%
KERS Hazardous	34.42%	36.85%	38.71%	38.71%
CERS Non-Hazardous	27.28%	24.06%[2]	31.99%	26.95%[2]
CERS Hazardous	46.50%	39.58%[2]	56.78%	44.33%[2]
SPRS	140.04%	146.28%	156.97%	156.97%

[1] House Bill 1 passed during the 2019 special legislative session reduced the FY2019-20 employer contribution rate to 49.47% for Regional Mental Health/Mental Retardation Boards, Local and District Health Departments, State Universities, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS non-hazardous system.

[2] House Bill 362 passed during the 2018 legislative session limited the CERS employer contribution rate increases to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028.

The contribution rates for all funds increased due to the updated actuarial assumptions adopted by the Board as a result of the experience study conducted after the June 30, 2018 valuation. In addition, the KERS Non-Hazardous pension fund contribution rate increased by 1.8% of pay due to covered payroll being 2.3% lower than the prior year (compared to the 0% payroll growth assumption in the valuation). Similarly, the KERS Hazardous pension fund contribution rate increased by 1.6% of pay due to covered payroll being 4.9% lower than the prior year (compared to the 0% payroll growth assumption in the valuation) and SPRS pension fund contribution rate increased by 2.7% of pay due to covered payroll being 2.2% lower than the prior year (compared to the 0% payroll growth assumption in the valuation).

As contribution rates increase there becomes increased incentive for participating employers to make business decisions to reduce their covered payroll to decrease their pension cost, thereby resulting in a continual pattern of additional increases in contribution rates. As a result, we recommend Kentucky Retirement Systems work with the legislators of the Commonwealth to change the method for collecting the amortization cost of the unfunded liability.

ASSUMPTIONS AND METHODS

The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation. The Board adopted updated assumptions for use in this actuarial valuation. The principle updated assumptions include:

- Change in the rates of salary increases for individuals.
- New post-retirement mortality assumption based on KRS retiree experience and the inclusion of an explicit assumption for future improvement in mortality.
- Updated mortality assumptions for members during employment and for disabled retirees.
- Change in the rates of retirement.
- Change in the rates that an active member is assumed to become an inactive member in the System prior to retirement.
- Updated rates of disability incidence.

The experience study included a review of several economic assumptions which encompassed the rate of inflation, the investment return assumption, and the payroll growth assumption. However, those assumptions remain unchanged from the prior actuarial valuation.

The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) since the June 30, 2018 valuation to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rate, and funding periods. The actuarial calculations are intended to provide information for rational decision making.

BENEFIT PROVISIONS

The benefit provisions reflected in these valuations are those that were in effect on June 30, 2019. House Bill 1 passed during the 2019 Special Legislative Session and allows certain employers in the KERS Non-Hazardous plan a continuation of their 49.47% contribution rate (pension and insurance) for fiscal year 2020 and an opportunity to elect to cease participating in the System as of June 30, 2020 under different provisions than were previously in statute. Since we are unable to identify which agencies will elect to cease participation, we have made no assumption regarding future employer elections and the results of this actuarial valuation reflect the membership as of June 30, 2019. There were no other benefit changes since the prior valuation.

DATA

Member data for retired, active and inactive members was supplied as of June 30, 2019, by the KRS staff. The staff also supplied asset information as of June 30, 2019. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. GRS is not responsible for the accuracy or completeness of the information provided to us by KRS.

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of KERS as of June 30, 2019. All of our work conforms with generally accepted actuarial principles and practices, and is in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Kentucky Code of Laws and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries and consultants. Mr. Newton and Mr. White are Enrolled Actuaries. All three of the undersigned are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries. All of the undersigned are experienced in performing valuations for large public retirement systems.

Sincerely,

Gabriel, Roeder, Smith & Co.

Joseph P. Newton, FSA, MAAA, EA
Pension Market Leader and Actuary

Daniel J. White, FSA, MAAA, EA
Senior Consultant

Janie Shaw, ASA, MAAA
Consultant

Summary of June 30, 2019 Actuarial Valuation Results

	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS
Actuarially Determined Contribution:					
Pension Fund Contribution	80.98%	38.71%	26.21%	46.31%	136.12%
Insurance Fund Contribution	12.03%	0.00%	5.78%	10.47%	20.85%
Total Calculated Employer Contribution	93.01%	38.71%	31.99%	56.78%	156.97%
Certified Contribution Rate for Fiscal Year Ending 2021[1]	93.01%	38.71%	26.95%	44.33%	156.97%
Assets:					
Retirement					
• Actuarial value (AVAR)	$2,206,279,835	$671,647,194	$7,049,526,916	$2,375,106,268	$282,162,043
• Market value (MVAR)	$2,233,671,656	$680,932,449	$7,159,921,492	$2,413,707,764	$286,165,095
• Ratio of actuarial to market value of assets	98.8%	98.6%	98.5%	98.4%	98.6%
Insurance					
• Actuarial value (AVAI)	$991,426,599	$525,314,509	$2,523,248,929	$1,313,658,522	$197,394,638
• Market value (MVAI)	$995,088,799	$534,052,943	$2,569,511,355	$1,340,713,985	$201,205,711
• Ratio of actuarial to market value of assets	99.6%	98.4%	98.2%	98.0%	98.1%
Funded Status:					
Retirement					
• Actuarial accrued liability	$16,466,427,022	$1,226,194,844	$14,356,113,761	$5,245,364,702	$1,045,317,668
• Unfunded accrued liability on AVAR	$14,260,147,187	$554,547,650	$7,306,586,845	$2,870,258,434	$763,155,625
• Funded ratio on AVAR	13.4%	54.8%	49.1%	45.3%	27.0%
• Unfunded accrued liability on MVAR	$14,232,755,366	$545,262,395	$7,196,192,269	$2,831,656,938	$759,152,573
• Funded ratio on MVAR	13.6%	55.5%	49.9%	46.0%	27.4%
Insurance					
• Actuarial accrued liability	$2,733,065,479	$426,704,754	$3,567,946,559	$1,732,879,194	$276,809,220
• Unfunded accrued liability on AVAI	$1,741,638,880	($98,609,755)	$1,044,697,630	$419,220,672	$79,414,582
• Funded ratio on AVAI	36.3%	123.1%	70.7%	75.8%	71.3%
• Unfunded accrued liability on MVAI	$1,737,976,680	($107,348,189)	$998,435,204	$392,165,209	$75,603,509
• Funded ratio on MVAI	36.4%	125.2%	72.0%	77.4%	72.7%
Membership:					
• Number of					
- Active Members	33,696	3,705	81,506	9,474	883
- Retirees and Beneficiaries	47,410	4,537	64,539	10,023	1,647
- Inactive Members	51,914	6,248	91,543	3,422	557
- Total	133,020	14,490	237,588	22,919	3,087
• Projected payroll of active members	$1,437,647,279	$150,445,806	$2,521,860,154	$559,352,588	$47,752,039
• Average salary of active members	$42,665	$40,606	$30,941	$59,041	$54,079

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[1] The fiscal year 2021 contribution rates for the KERS and SPRS systems will require budgeting during the 2020 legislative session. Contribution rates for CERS Systems limited to a 12% increase in the certified contribution rates from the prior fiscal year in accordance with House Bill 362 (2018 legislative session).

5.3

Kentucky Employees Retirement System (KERS)

Actuarial Valuation Report
as of June 30, 2019

GRS Retirement Consulting

P: 469.524.0000 | F: 469.524.0003 | www.grsconsulting.com

November 6, 2019

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

Subject: Actuarial Valuation as of June 30, 2019

Dear Trustees of the Board:

This report describes the current actuarial condition of the Kentucky Employees Retirement System (KERS), provides the actuarially determined employer contribution rates for fiscal year ending June 30, 2021 and June 30, 2022, and analyzes changes in the System's financial condition. In addition, the report provides various summaries of the data.

Separate reports are issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statements 67, 68, 74 and 75. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of June 30, the first day of the plan year for KRS. This report was prepared at the request of the Board of Trustees of the Kentucky Retirement Systems (Board) and is intended for use by the KRS staff and those designated or approved by the Board.

FINANCING OBJECTIVES AND FUNDING POLICY

The employer contribution rate is determined in accordance with Section 61.565 of Kentucky Statute. As specified by the Statute, the employer contribution rate is determined based on a closed thirty-year amortization period beginning July 1, 2013. As a result, the amortization period used in the 2019 actuarial valuation is 24 years. The contribution rate determined by this actuarial valuation becomes effective twelve months after the valuation date. In other words, the contribution rate determined by this June 30, 2019 actuarial valuation will be used by the Board to recommend the participating employers' and the Commonwealth's contribution rates for the fiscal year beginning July 1, 2020 and ending June 30, 2021, as well as the subsequent fiscal year beginning July 1, 2021 and ending June 30, 2022.

ASSUMPTIONS AND METHODS

The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation. An experience study was conducted after the June 30, 2018 actuarial valuation and the Board adopted updated assumptions for use in this actuarial valuation. The principle updated assumptions include:

- Change in the rates of salary increases for individuals.
- New post-retirement mortality assumption based on KRS retiree experience and the inclusion of an explicit assumption for future improvement in mortality.
- Updated mortality assumptions for members during employment and for disabled retirees.
- Change in the rates of retirement.
- Change in the rates that an active member is assumed to become an inactive member in the System prior to retirement.
- Updated rates of disability incidence.

The experience study included a review of several economic assumptions which encompassed the rate of inflation, the investment return assumption, and the payroll growth assumption. However, those assumptions remain unchanged from the prior actuarial valuation.

The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) since the June 30, 2018 valuation to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rate, and funding periods. The actuarial calculations are intended to provide information for rational decision making.

BENEFIT PROVISIONS

The benefit provisions reflected in these valuations are those which were in effect on June 30, 2019. House Bill 1 passed during the 2019 Special Legislative Session and allows certain employers in the Non-Hazardous plan a continuation of their 49.47% contribution rate (pension and insurance) for fiscal year 2020 and an opportunity to elect to cease participating in the System as of June 30, 2020 under different provisions than were previously in statute. Since we are unable to identify at this time which agencies will elect to cease participation, we have made no assumption regarding future employer elections and the results of this actuarial valuation reflect the membership as of June 30, 2019. There were no other benefit changes since the prior valuation.

DATA

Member data for retired, active and inactive members was supplied as of June 30, 2019, by the KRS staff. The staff also supplied asset information as of June 30, 2019. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. GRS is not responsible for the accuracy or completeness of the information provided to us by KRS.

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of KERS as of June 30, 2019.

All of our work conforms with generally accepted actuarial principles and practices, and is in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Kentucky Code of Laws and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries and consultants. Mr. Newton and Mr. White are Enrolled Actuaries. All three of the undersigned are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries. All of the undersigned are experienced in performing valuations for large public retirement systems.

Sincerely,

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Janie Shaw

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Consultant

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SECTION 1

EXECUTIVE SUMMARY

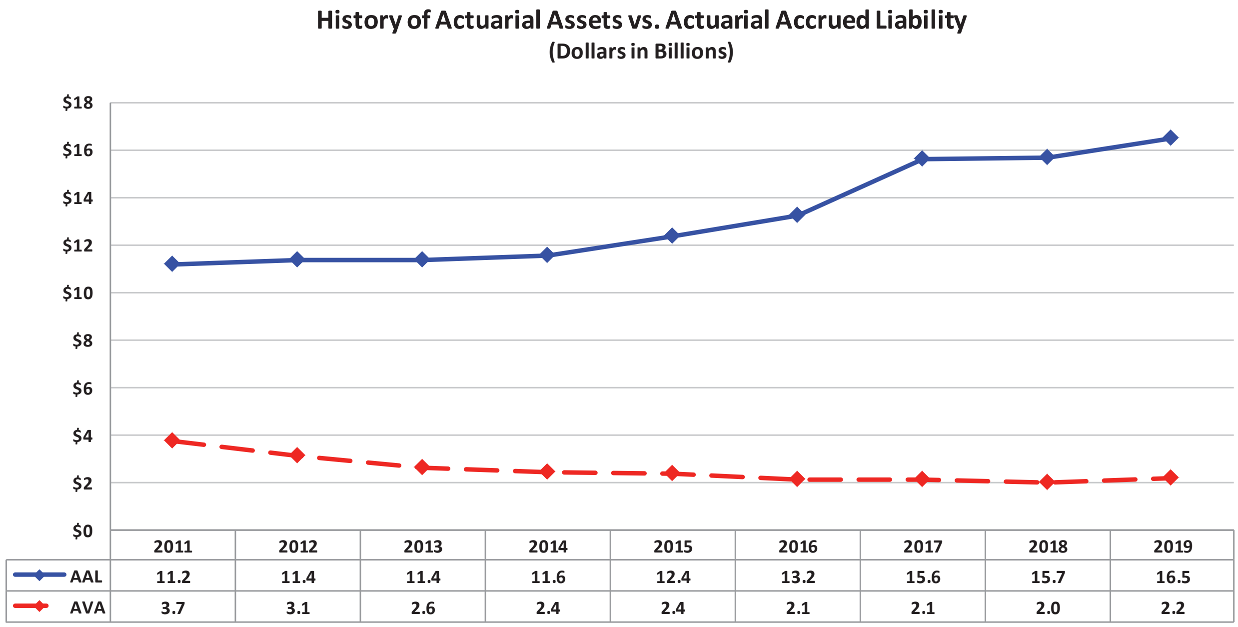
	Non-Hazardous		Hazardous		Total	
	June 30, 2019	June 30, 2018	June 30, 2019	June 30, 2018	June 30, 2019	June 30, 2018
Actuarially Determined Contribution:						
Retirement	80.98%	74.54%	38.71%	34.42%		
Insurance	12.03%	10.65%	0.00%	0.00%		
Total	93.01%	85.19%	38.71%	34.42%	N/A	N/A
Contribution Rate for Next Fiscal Year[1]	93.01%	83.43%	38.71%	36.85%		
Assets:						
Retirement						
• Actuarial value (AVAR)	$2,206,280	$2,019,278	$671,647	$639,262	$2,877,927	$2,658,540
• Market value (MVAR)	$2,233,672	$2,004,446	$680,932	$645,485	$2,914,604	$2,649,931
• Ratio of actuarial to market value of assets	98.8%	100.7%	98.6%	99.0%	98.7%	100.3%
Insurance						
• Actuarial value (AVAI)	$991,427	$887,121	$525,315	$511,441	$1,516,742	$1,398,562
• Market value (MVAI)	$995,089	$891,205	$534,053	$519,072	$1,529,142	$1,410,277
• Ratio of actuarial to market value of assets	99.6%	99.5%	98.4%	98.5%	99.2%	99.2%
Funded Status:						
Retirement						
• Actuarial accrued liability	$16,466,428	$15,675,232	$1,226,195	$1,151,923	$17,692,623	$16,827,155
• Unfunded accrued liability on AVAR	$14,260,148	$13,655,954	$554,548	$512,661	$14,814,696	$14,168,615
• Funded ratio on AVAR	13.4%	12.9%	54.8%	55.5%	16.3%	15.8%
• Unfunded accrued liability on MVAR	$14,232,756	$13,670,786	$545,263	$506,438	$14,778,019	$14,177,224
• Funded ratio on MVAR	13.6%	12.8%	55.5%	56.0%	16.5%	15.7%
Insurance						
• Actuarial accrued liability	$2,733,065	$2,435,505	$426,704	$393,481	$3,159,769	$2,828,986
• Unfunded accrued liability on AVAI	$1,741,638	$1,548,384	($98,611)	($117,960)	$1,643,027	$1,430,424
• Funded ratio on AVAI	36.3%	36.4%	123.1%	130.0%	48.0%	49.4%
• Unfunded accrued liability on MVAI	$1,737,976	$1,544,300	($107,349)	($125,591)	$1,630,627	$1,418,709
• Funded ratio on MVAI	36.4%	36.6%	125.2%	131.9%	48.4%	49.9%
Membership:						
• Number of						
- Active Members	33,696	35,139	3,705	3,929	37,401	39,068
- Retirees and Beneficiaries	47,410	46,526	4,537	4,370	51,947	50,896
- Inactive Members	51,914	50,435	6,248	5,727	58,162	56,162
- Total	133,020	132,100	14,490	14,026	147,510	146,126
• Projected payroll of active members	$1,437,647	$1,471,477	$150,446	$158,213	$1,588,093	$1,629,690
• Average salary of active members	$42,665	$41,876	$40,606	$40,268	$42,461	$41,714

[1] Contribution rates for fiscal year 2021 will require budgeting during the 2020 legislative session.

Executive Summary (Continued)

Non-Hazardous Retirement Fund

The unfunded actuarial accrued liability of the non-hazardous retirement system increased by $604 million since the prior year's valuation to $14.3 billion. The largest source of this increase is due to a $705 million increase in the liability due to the updated actuarial assumptions. Below is a chart with the historical actuarial value of assets and actuarial accrued liability. The divergence in the assets and liability over the last nine years has generally been due to a combination of: (1) contributions that were insufficient to amortize the unfunded actuarial accrued liability, (2) a decrease in the assumed rate of return in 2015, 2016 and again in 2017, and (3) the actual investment experience being less than the fund's expected investment return assumption.



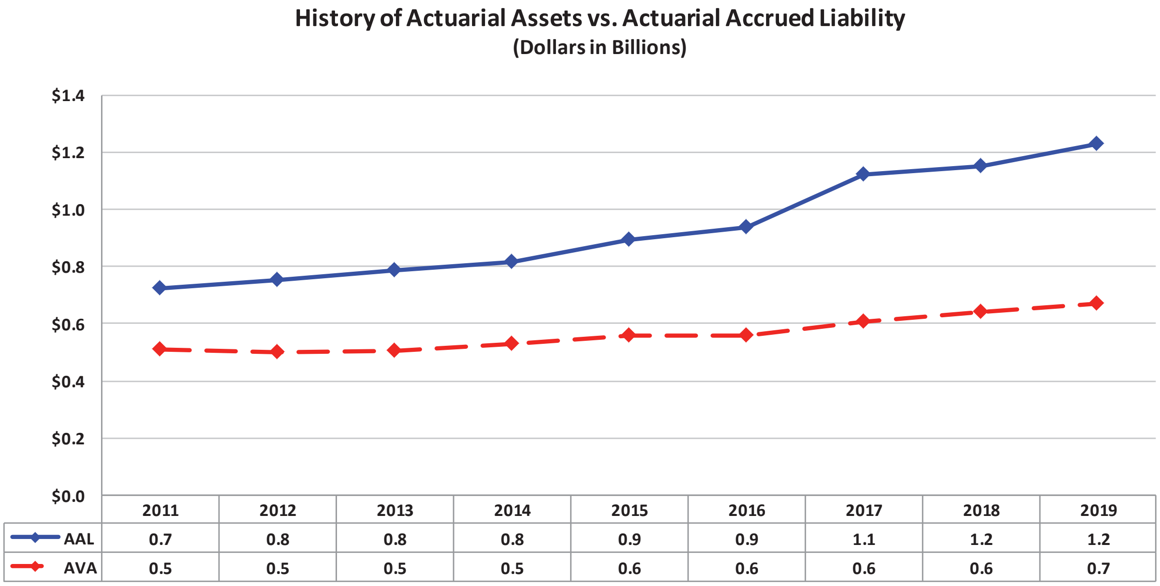
	2011	2012	2013	2014	2015	2016	2017	2018	2019
AAL	11.2	11.4	11.4	11.6	12.4	13.2	15.6	15.7	16.5
AVA	3.7	3.1	2.6	2.4	2.4	2.1	2.1	2.0	2.2

For FY2018-19, the KERS non-hazardous pension system distributed $1,012 million in benefit payments and administrative expenses, and received $1,129 million in employer and employee contributions (excluding contributions to the 401(h) account). As of June 30, 2019, plan assets for this system were $2,234 million (excluding assets in the 401(h) account). To stabilize the financial condition of this system and reduce the likelihood that plan assets will become exhausted, it is imperative that contributions to the system continue to exceed the benefit payments. If the entire actuarially determined employer contribution documented in this letter is not made to this system in FY 2020-21 and FY 2021-22, the financial condition of this retirement system is expected to deteriorate and there is a significant risk of the plan assets being exhausted.

Executive Summary (Continued)

Hazardous Retirement Fund

The unfunded actuarial accrued liability of the hazardous retirement system increased by $42 million since the prior year's valuation to $555 million. The largest source of this increase is due to a $49 million increase in the liability due to the updated actuarial assumptions. Below is a chart with the historical actuarial value of assets and actuarial accrued liability. The divergence in the assets and liability over the last nine years has generally been due to a combination of: (1) contributions that were insufficient to amortize the unfunded actuarial accrued liability, (2) a decrease in the assumed rate of return in 2015 and again in 2017, and (3) the actual investment experience being less than the fund's expected investment return assumption.



History of Actuarial Assets vs. Actuarial Accrued Liability
(Dollars in Billions)

	2011	2012	2013	2014	2015	2016	2017	2018	2019
AAL	0.7	0.8	0.8	0.8	0.9	0.9	1.1	1.2	1.2
AVA	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7

Executive Summary (Continued)

Summary of Change in Financial Condition of the Insurance Funds

The non-Medicare premiums were lower than expected and the Medicare premiums were higher than expected from calendar year 2019 to 2020. Specifically, the non-Medicare premiums were expected to increase by 7.00% from calendar year 2019 to calendar year 2020 (i.e. the medical trend assumption for non-Medicare premiums used in the actuarial valuation) and the actual average premiums were relatively level. Also, the Medicare premiums were expected to increase by 5.00% from calendar year 2019 to calendar year 2020 (i.e. the medical trend assumption used in the actuarial valuation for Medicare premium) and the actual average premiums increased by 13%. The favorable non-Medicare premium experience offset most of the actuarial loss that resulted from the new Medicare premiums. In fact, the overall premium experience resulted in a small actuarial gain for the hazardous plan which has younger retirees.

Non-Hazardous Insurance Fund

Since the prior year's valuation, the unfunded actuarial accrued liability of the non-hazardous insurance fund increased by $193 million since the prior year's valuation to $1,742 million. The largest source of this increase is due to a $116 million increase in the liability due to the updated actuarial assumptions adopted by the Board as a result of the experience study. The corresponding funded ratio slightly decreased from 36.4% at June 30, 2018 to 36.3% at June 30, 2019.

Hazardous Insurance Fund

Since the prior year's valuation, the plan assets in excess of the actuarial accrued liability of the hazardous insurance fund decreased by $19 million since the prior year's valuation to a $99 million surplus. The largest source of this decrease is due to a $16 million increase in the liability due to the updated actuarial assumptions adopted by the Board as a result of the experience study. The corresponding funded ratio decreased from 130.0% at June 30, 2018 to 123.1% at June 30, 2019.

SECTION 2

DISCUSSION

Discussion

The Kentucky Employees Retirement System (KERS) is a defined benefit pension fund that provides pensions and health care coverage for employees of state government, non-teaching staff at regional state supported universities, local health departments, regional mental health/mental retardation agencies, and other quasi-state agencies. KERS includes both non-hazardous and hazardous duty benefits. This report presents the result of the June 30, 2019 actuarial funding valuation for both the Retirement Funds and Insurance Funds.

The primary purposes of the valuation report are to depict the current financial condition of the Funds and analyze changes in the Fund's financial condition. In addition, the report provides various summaries of the data.

The actuarially determined contribution rates consist of two components: a normal cost rate and an amortization cost to finance the unfunded actuarial accrued liability. The normal cost rate is the theoretical amount which would be required to pay the members' benefits, based on the current plan provisions, if this amount had been contributed from each member's entry date and if the fund's experience exactly followed the actuarial assumptions. This is the amount that it should cost to provide the benefits for an average member. Since members contribute to the fund, only the excess of the normal rate over the member contribution rate is included in the employer contribution rate. The amortization cost is the amount, expressed as a percentage of payroll, necessary to amortize the unfunded actuarial accrued liability. The payroll growth rate and discount rate assumptions are selected by the Board. The funding period is specified in Section 61.565 of Kentucky Statute.

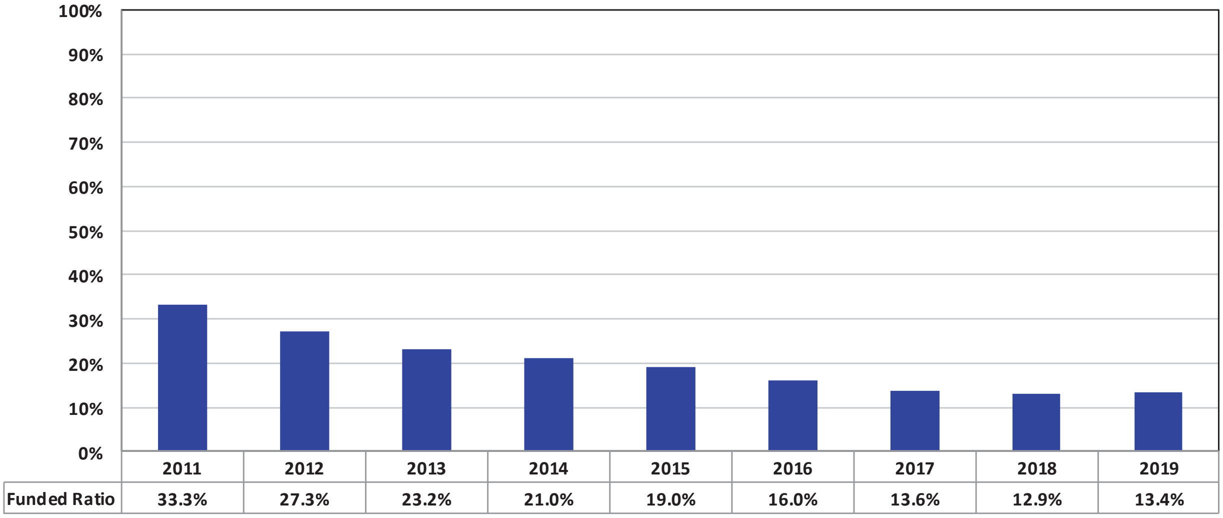
All of the actuarial and financial tables referenced by the other sections of this Report appear in Section 3. Section 4 provides member data and statistical information. Section 5 provides a discussion of various risk measures, which are intended to aid stakeholders in understanding the effects of future experience differing from the assumptions used in performing an actuarial valuation. This section was added to the report this year in compliance with the newly adopted Actuarial Standards of Practice. Appendices A and B provide summaries of the principle actuarial assumptions and methods and plan provisions. Finally, Appendix C provides a glossary of technical terms that are used throughout this report.

Funding Progress

The following charts provide a nine-year history of the retirement funds' funded ratio (i.e. the Actuarial Value of Assets divided by the Actuarial Accrued Liability). The decline in the funded ratio over the last nine years has generally been due to: (1) actual contributions being insufficient to finance the unfunded actuarial accrued liability, (2) a decrease in the assumed rate of return in 2015, 2016 and again in 2017, and (3) actual investment experience being less than the investment return assumption.

Non-Hazardous Retirement Fund

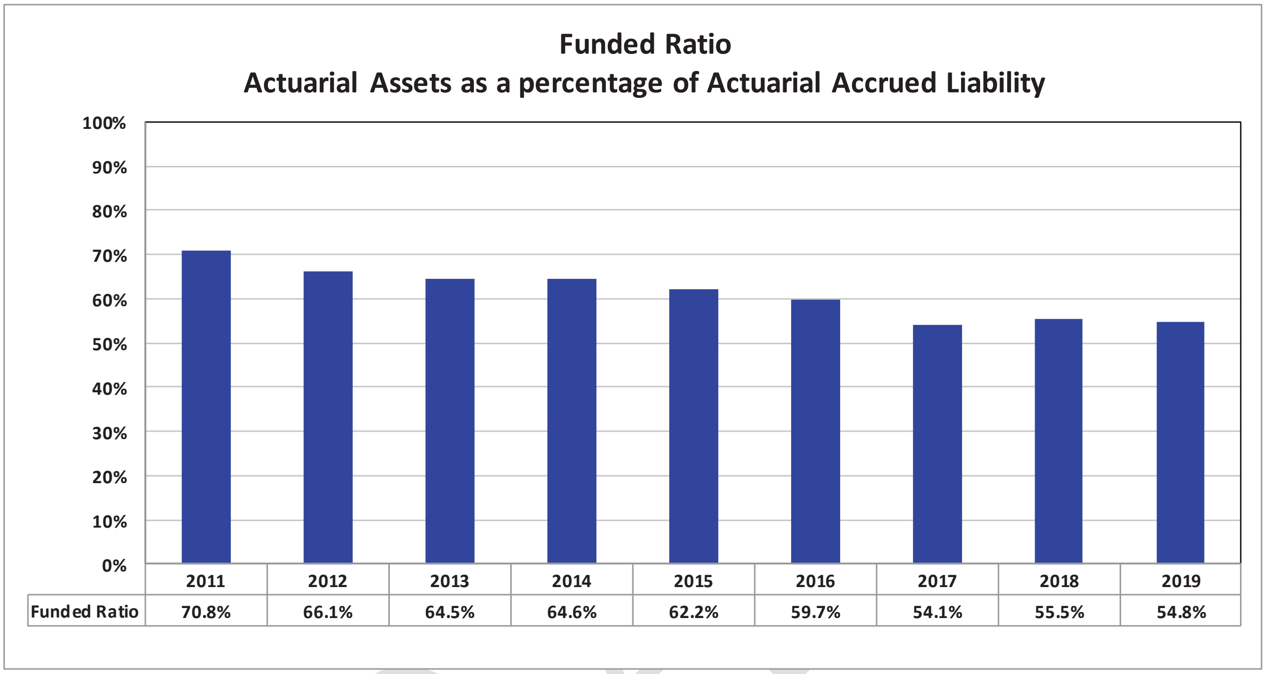
Funded Ratio
Actuarial Assets as a percentage of Actuarial Accrued Liability



	2011	2012	2013	2014	2015	2016	2017	2018	2019
Funded Ratio	33.3%	27.3%	23.2%	21.0%	19.0%	16.0%	13.6%	12.9%	13.4%

Funding Progress (Continued)

Hazardous Retirement Fund


Funded Ratio
Actuarial Assets as a percentage of Actuarial Accrued Liability

	2011	2012	2013	2014	2015	2016	2017	2018	2019
Funded Ratio	70.8%	66.1%	64.5%	64.6%	62.2%	59.7%	54.1%	55.5%	54.8%

Assuming the actuarial determined contributions are actually paid in future years and absent future unfavorable experience we expect the funded ratio to continue improving. Also, the dollar amount of the unfunded actuarial accrued liability, or the difference between the actuarial accrued liability and the actuarial value of assets, is expected to decrease now that the higher contribution rates determined by the June 30, 2017 actuarial valuation became effective July 1, 2018. Table 9, Schedule of Funding Progress, in the following section of the report provides additional detail regarding the funding progress of the Retirement Funds.

Asset Gains/ (Losses)

The actuarial value of assets ("AVA") is based on a smoothed market value of assets, using a systematic approach to phase-in the difference between the actual and expected investment return on the market value of assets (adjusted for receipts and disbursements during the year). This is appropriate because it dampens the short-term volatility inherent in investment markets. The returns are computed net of investment expenses. The actuarial value of assets for the non-hazardous retirement fund increased from $2.019 billion to $2.206 billion since the prior valuation. Table 7 in the following section of the report provides the development of the actuarial value of assets.

The rate of return on the market value of assets for the non-hazardous retirement fund on a dollar-weighted basis for fiscal year 2019 was a 5.4% which is greater than the 5.25% expected annual return. The return on an actuarial (smoothed) asset value was 3.4%, which resulted in a $39 million loss for the fiscal year. This difference in the estimated return on market value and actuarial value illustrates the smoothing effect of the asset valuation method.

The market value of assets is $27 million greater than the actuarial value of assets, which signifies that the retirement fund is in a position of deferred gains to be realized in future years.

Likewise, the actuarial value of assets for the hazardous retirement fund increased from $639 million to $672 million since the prior valuation. The rate of return on the market value of assets on a dollar-weighted basis for fiscal year 2019 was a 5.6% which is less than the 6.25% expected annual return. The return on an actuarial (smoothed) asset value was 5.2%, which resulted in a $6.6 million loss for the fiscal year. The market value of assets is $9.3 million greater than the actuarial value of assets, which signifies that the retirement fund is in a position of deferred gains to be realized in future years.

Table 6 in the following section of this report provides asset information that was included in the annual financial statements of the System. Also, Tables 6 and 7 shows the estimated yield on a market value basis and on the actuarial asset valuation method.

Actuarial Gains/ (Losses)

The annual actuarial valuation is a snapshot analysis of the benefit liabilities, assets and funded position of the Systems as of the first day of the plan year. In any one fiscal year, the experience can be better or worse from that which is assumed or expected. The actuarial assumptions do not necessarily attempt to model what the experience will be for any one given fiscal year, but instead try to model the overall experience over many years. Therefore, as long as the actual experience of a retirement system is reasonably close to the current assumptions, the long-term funding requirements of the system will remain relatively consistent.

Below are tables that separately show a reconciliation of the actuarial gains / (losses) since the prior actuarial valuation for the retirement and health insurance funds, which include the effect of asset and liability gains and losses, changes in assumptions, changes in plan provisions, etc.

Retirement Experience Gain or (Loss)
(Dollar amounts expressed in thousands)

	Non-Hazardous	Hazardous
A. Calculation of total actuarial gain or loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	$ 13,655,954	$ 512,661
2. Normal cost and administrative expenses	190,998	27,276
3. Less: contributions for the year	(1,129,258)	(72,381)
4. Interest accrual	692,308	30,632
5. Expected UAAL (Sum of Items 1 - 4)	$ 13,410,002	$ 498,188
6. Actual UAAL as of June 30,2019	$ 14,260,148	$ 554,548
7. Total gain (loss) for the year (Item 5 - Item 6)	$ (850,146)	$ (56,360)
B. Source of gains and losses		
8. Asset gain (loss) for the year	$ (38,932)	$ (6,606)
9. Liability experience gain (loss) for the year	(106,272)	(504)
10. Plan Change	—	—
11. Assumption change	(704,942)	(49,250)
12. Total	$ (850,146)	$ (56,360)

Of the $850 million and $56 million in actuarial losses experienced by the non-hazardous and hazardous retirement funds, respectively, $705 million and $49 million were due to the increases in liability resulting from the assumption changes reflected as a result of the experience study as of June 30, 2018.

Actuarial Gains/ (Losses) (Continued)

Insurance Experience Gain or (Loss)
(Dollar amounts expressed in thousands)

	Non-Hazardous	Hazardous
A. Calculation of total actuarial gain or loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	$ 1,548,384	$ (117,960)
2. Normal cost and administrative expenses	42,084	9,113
3. Less: contributions for the year	(184,930)	(5,906)
4. Interest accrual	92,310	(7,272)
5. Expected UAAL (Sum of Items 1 - 4)	$ 1,497,848	$ (122,025)
6. Actual UAAL as of June 30,2019	$ 1,741,638	$ (98,611)
7. Total gain (loss) for the year (Item 5 - Item 6)	$ (243,790)	$ (23,414)
B. Source of gains and losses		
8. Asset gain (loss) for the year	$ (11,091)	$ (4,282)
9. Liability experience gain (loss) for the year	(66,090)	(738)
10. Plan Change	—	—
11. Assumption change	(166,609)	(18,394)
12. Total	$ (243,790)	$ (23,414)

Of the $244 million and $23 million in actuarial losses experienced by the non-hazardous and hazardous insurance funds, respectively, $167 million and $18 million were due to the increases in liability resulting from the assumption changes reflected as a result of the experience study as of June 30, 2018 and the updated trend assumption. Additionally, the non-hazardous insurance fund's liability increased by $66 million due to the premium experience ($50 million) and other demographic experience ($16 million). The hazardous insurance fund's liability decreased by a net $0.7 million due to a $2.6 million gain due to the premium experience and a $3.3 million loss attributable to other demographic experience.

Actuarial Assumptions and Methods

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an annual investment return assumption. The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation. An experience study was conducted after the June 30, 2018 actuarial valuation and the Board adopted updated assumptions for use in this actuarial valuation. The principle updated assumptions include:

- Change in the rates of salary increases for individuals.
- New post-retirement mortality assumption based on KRS retiree experience and the inclusion of an explicit assumption for future improvement in mortality.
- Updated mortality assumptions for members during employment and for disabled retirees.
- Change in the rates of retirement.
- Change in the rates that an active member is assumed to become an inactive member in the System prior to retirement.
- Updated rates of disability incidence.

The experience study included a review of several economic assumptions which included the rate of inflation, the investment return assumption, and the payroll growth assumption. However, those assumptions remain unchanged from the prior actuarial valuation.

The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) since the June 30, 2018 valuation to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.

It is our opinion that the assumptions are internally consistent, reasonable, and reflect anticipated future experience of the System. Appendix A includes a summary of the actuarial assumptions and methods used in this valuation.

Future actuarial measurements may differ significantly from the current measurements 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. This report does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

Benefit Provisions

Appendix B of this report includes a summary of the benefit provisions for KERS. House Bill 1 passed during the 2019 Special Legislative Session and allows certain employers in the Non-Hazardous plan to elect to cease participating in the System as of June 30, 2020 under different provisions than were previously in statute. Since we are unable to identify at this time which agencies will elect to cease participation, we have made no assumption regarding future employer elections and the results of this actuarial valuation reflect the membership as of June 30, 2019. There were no other benefit changes since the prior valuation.

SECTION 3

ACTUARIAL TABLES

Actuarial Tables

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RETIREMENT BENEFITS

ACTUARIAL TABLES

Development of Unfunded Actuarial Accrued Liability
Retirement Benefits

(Dollar amounts expressed in thousands)

		June 30, 2019	
		Non-Hazardous (1)	Hazardous (2)
1.	Projected payroll of active members	$ 1,437,647	$ 150,446
2.	Present value of future pay	$ 11,307,599	$ 1,121,242
3.	Normal cost rate		
	a. Total normal cost rate	12.18%	16.48%
	b. Less: member contribution rate	-5.00%	-8.00%
	c. Employer normal cost rate	7.18%	8.48%
4.	Actuarial accrued liability for active members		
	a. Present value of future benefits	$ 5,271,991	$ 523,314
	b. Less: present value of future normal costs	(1,318,794)	(176,937)
	c. Actuarial accrued liability	$ 3,953,197	$ 346,377
5.	Total actuarial accrued liability		
	a. Retirees and beneficiaries	$ 11,897,063	$ 834,633
	b. Inactive members	616,168	45,185
	c. Active members (Item 4c)	3,953,197	346,377
	d. Total	$ 16,466,428	$ 1,226,195
6.	Actuarial value of assets	$ 2,206,280	$ 671,647
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	$ 14,260,148	$ 554,548
8.	Funded Ratio	13.4%	54.8%

Actuarial Present Value of Future Benefits
Retirement Benefits
(Dollar amounts expressed in thousands)

		June 30, 2019	
		Non-Hazardous (1)	Hazardous (2)
1.	Active members		
	a. Service retirement	$ 4,678,511	$ 467,800
	b. Deferred termination benefits and refunds	356,788	35,202
	c. Survivor benefits	73,963	4,765
	d. Disability benefits	162,729	15,547
	e. Total	$ 5,271,991	$ 523,314
2.	Retired members		
	a. Service retirement	$ 10,908,911	$ 770,537
	b. Disability retirement	286,978	18,107
	c. Beneficiaries	701,174	45,989
	d. Total	$ 11,897,063	$ 834,633
3.	Inactive members		
	a. Vested terminations	$ 579,691	$ 37,563
	b. Nonvested terminations	36,477	7,622
	c. Total	$ 616,168	$ 45,185
4.	Total actuarial present value of future benefits	$ 17,785,222	$ 1,403,132

Development of Actuarially Determined Contribution Rate
Retirement Benefits

		June 30, 2019	
		Non-Hazardous (1)	Hazardous (2)
1.	Total normal cost rate		
	a. Service retirement	8.40%	11.90%
	b. Deferred termination benefits and refunds	2.82%	3.58%
	c. Survivor benefits	0.35%	0.30%
	d. Disability benefits	0.61%	0.70%
	e. Total	12.18%	16.48%
2.	Less: member contribution rate	-5.00%	-8.00%
3.	Total employer normal cost rate	7.18%	8.48%
4.	Administrative expenses	0.81%	0.73%
5.	Net employer normal cost rate	7.99%	9.21%
6.	UAAL amortization contribution	72.99%	29.50%
7.	Total calculated employer contribution	80.98%	38.71%

Actuarial Balance Sheet

Non-Hazardous Members Retirement

(Dollar amounts expressed in thousands)

	June 30, 2019 (1)	June 30, 2018 (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	$ 2,206,280	$ 2,019,278
b. Present value of future member contributions	$ 565,380	$ 627,853
c. Present value of future employer contributions		
i. Normal cost contributions	$ 753,414	$ 828,611
ii. Unfunded accrued liability contributions	14,260,148	13,655,954
iii. Total future employer contributions	$ 15,013,562	$ 14,484,565
d. Total assets	$ 17,785,222	$ 17,131,696
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	$ 1,318,794	$ 1,456,464
ii. Accrued liability	3,953,197	3,746,213
iii. Total present value of future benefits	$ 5,271,991	$ 5,202,677
b. Present value of benefits payable on account of current retired members and beneficiaries	$ 11,897,063	$ 11,419,229
c. Present value of benefits payable on account of current inactive members	$ 616,168	$ 509,790
d. Total liabilities	$ 17,785,222	$ 17,131,696

Actuarial Balance Sheet

Hazardous Members Retirement

(Dollar amounts expressed in thousands)

		June 30, 2019 (1)	June 30, 2018 (2)
1.	Assets - Present and Expected Future Resources		
	a. Current assets (actuarial value)	$ 671,647	$ 639,262
	b. Present value of future member contributions	$ 89,699	$ 109,399
	c. Present value of future employer contributions		
	i. Normal cost contributions	$ 87,238	$ 101,503
	ii. Unfunded accrued liability contributions	554,548	512,661
	iii. Total future employer contributions	$ 641,786	$ 614,164
	d. Total assets	$ 1,403,132	$ 1,362,825
2.	Liabilities - Present Value of Expected Future Benefit Payments		
	a. Active members		
	i. Present value of future normal costs	$ 176,937	$ 210,902
	ii. Accrued liability	346,377	341,612
	iii. Total present value of future benefits	$ 523,314	$ 552,514
	b. Present value of benefits payable on account of current retired members and beneficiaries	$ 834,633	$ 771,706
	c. Present value of benefits payable on account of current inactive members	$ 45,185	$ 38,605
	d. Total liabilities	$ 1,403,132	$ 1,362,825

Reconciliation of Retirement Net Assets

(Dollar amounts expressed in thousands)[1]

	Year Ending			
	June 30, 2019		June 30, 2019	
	(1)		(2)	
	Non-Hazardous		**Hazardous**	
1. Value of assets at beginning of year	$	2,004,446	$	645,485
2. Revenue for the year				
a. Contributions				
i. Member contributions	$	93,759	$	17,118
ii. Employer contributions		948,866		55,230
iii. Other contributions (less 401h)		86,632		33
iii. Total	$	1,129,258	$	72,381
b. Income				
i. Interest, dividends, and other income	$	45,887	$	16,014
ii. Investment expenses		(13,378)		(4,589)
iii. Net	$	32,509	$	11,426
c. Net realized and unrealized gains (losses)		79,862		24,955
d. Total revenue	$	1,241,629	$	108,762
3. Expenditures for the year				
a. Disbursements				
i. Refunds	$	12,342	$	2,684
ii. Regular annuity benefits		988,349		69,527
iii. Other benefit payments		0		0
iv. Transfers to other systems		0		0
v. Total	$	1,000,691	$	72,211
b. Administrative expenses and depreciation		11,712		1,103
c. Total expenditures	$	1,012,403	$	73,314
4. Increase in net assets (Item 2. - Item 3.)	$	229,226	$	35,447
5. Value of assets at end of year (Item 1. + Item 4.)	$	2,233,672	$	680,932
6. Net external cash flow				
a. Dollar amount	$	116,855	$	(933)
b. Percentage of market value		5.5%		-0.1%
7. Estimated annual return on net assets		5.4%		5.6%

[1] Amounts may not add due to rounding

[1] Excludes 401h assets

Development of Actuarial Value of Assets

Non-Hazardous Members Retirement

(Dollar amounts expressed in thousands)*

	Year Ending		June 30, 2019
1.	Actuarial value of assets at beginning of year	$	2,019,278
2.	Market value of assets at beginning of year	$	2,004,446
3.	Net new investments		
	a. Contributions	$	1,129,258
	b. Benefit payments		(1,000,691)
	c. Administrative expenses		(11,712)
	d. Subtotal	$	116,855
4.	Market value of assets at end of year	$	2,233,672
5.	Net earnings (Item 4. - Item 2. - Item 3.d.)	$	112,371
6.	Assumed investment return rate for fiscal year		5.25%
7.	Expected return for immediate recognition	$	108,301
8.	Excess return for phased recognition	$	4,070

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2019	$	4,070	$	814
b.	2018		42,022		8,404
c.	2017		89,028		17,806
d.	2016		(183,443)		(36,689)
e.	2015		(142,444)		(28,489)
f.	Total			$	(38,153)

10.	Actuarial value of assets as of June 30, 2019 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	2,206,280
11.	Ratio of actuarial value to market value		98.8%
12.	Estimated annual return on actuarial value of assets		3.4%

* Amounts may not add due to rounding

Development of Actuarial Value of Assets

Hazardous Members Retirement

(Dollar amounts expressed in thousands)*

	Year Ending		June 30, 2019
1.	Actuarial value of assets at beginning of year	$	639,262
2.	Market value of assets at beginning of year	$	645,485
3.	Net new investments		
	a. Contributions	$	72,381
	b. Benefit payments		(72,211)
	c. Administrative expenses		(1,103)
	d. Subtotal	$	(933)
4.	Market value of assets at end of year	$	680,932
5.	Net earnings (Item 4. - Item 2. - Item 3.d.)	$	36,381
6.	Assumed investment return rate for fiscal year		6.25%
7.	Expected return for immediate recognition	$	40,314
8.	Excess return for phased recognition	$	(3,933)

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2019	$	(3,933)	$	(787)
b.	2018		14,102		2,820
c.	2017		31,023		6,205
d.	2016		(42,195)		(8,439)
e.	2015		(33,972)		(6,794)
f.	Total			$	(6,995)

10.	Actuarial value of assets as of June 30, 2019 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	671,647
11.	Ratio of actuarial value to market value		98.6%
12.	Estimated annual return on actuarial value of assets		5.2%

* Amounts may not add due to rounding

Schedule of Funding Progress
Retirement Benefits
(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Value of Assets (AVA) (2)	Actuarial Accrued Liability (AAL) (3)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2) (4)	Funded Ratio (2)/(3) (5)	Annual Covered Payroll (6)	UAAL as % of Payroll (4)/(6) (7)
Non-Hazardous Members						
2011	$ 3,726,986	$ 11,182,142	$ 7,455,156	33.3%	$ 1,731,633	430.5%
2012	3,101,317	11,361,048	8,259,731	27.3%	1,644,897	502.1%
2013	2,636,123	11,386,602	8,750,479	23.2%	1,644,409	532.1%
2014	2,423,957	11,550,110	9,126,154	21.0%	1,577,496	578.5%
2015	2,350,990	12,359,673	10,008,683	19.0%	1,544,234	648.1%
2016	2,112,286	13,224,698	11,112,412	16.0%	1,529,249	726.7%
2017	2,123,623	15,591,641	13,468,018	13.6%	1,531,535	879.4%
2018	2,019,278	15,675,232	13,655,954	12.9%	1,471,477	928.0%
2019	2,206,280	16,466,428	14,260,148	13.4%	1,437,647	991.9%
Hazardous Members						
2011	$ 510,749	$ 721,293	$ 210,545	70.8%	$ 133,054	158.2%
2012	497,226	752,699	255,473	66.1%	131,977	193.6%
2013	505,657	783,981	278,324	64.5%	132,015	210.8%
2014	527,897	816,850	288,953	64.6%	129,076	223.9%
2015	556,688	895,433	338,746	62.2%	128,680	263.2%
2016	559,487	936,706	377,219	59.7%	147,563	255.6%
2017	607,159	1,121,420	514,261	54.1%	162,418	316.6%
2018	639,262	1,151,923	512,661	55.5%	158,213	324.0%
2019	671,647	1,226,195	554,548	54.8%	150,446	368.6%
Total KERS Members						
2011	$ 4,237,735	$ 11,903,435	$ 7,665,700	35.6%	$ 1,864,687	411.1%
2012	3,598,543	12,113,747	8,515,204	29.7%	1,776,874	479.2%
2013	3,141,780	12,170,583	9,028,803	25.8%	1,776,424	508.3%
2014	2,951,854	12,366,960	9,415,106	23.9%	1,706,572	551.7%
2015	2,907,678	13,255,106	10,347,428	21.9%	1,672,914	618.5%
2016	2,671,773	14,161,404	11,489,631	18.9%	1,676,812	685.2%
2017	2,730,782	16,713,061	13,982,279	16.3%	1,693,953	825.4%
2018	2,658,540	16,827,155	14,168,615	15.8%	1,629,690	869.4%
2019	2,877,927	17,692,623	14,814,696	16.3%	1,588,093	932.9%

Summary of Principal Assumptions and Methods

Below is a summary of the principal economic assumptions, cost method, and the method for financing the unfunded actuarial accrued liability:

	Non-Hazardous	Hazardous
Valuation date:	June 30, 2019	June 30, 2019
Actuarial cost method:	Entry Age Normal	Entry Age Normal
Amortization method:	Level percentage of payroll (0% payroll growth assumed)	Level percentage of payroll (0% payroll growth assumed)
Amortization period for contribution rate:	24-year closed period	24-year closed period
Asset valuation method:	5-Year Smoothed Market	5-Year Smoothed Market
Actuarial assumptions:		
Investment rate of return	5.25%	6.25%
Projected salary increases	3.30% to 15.30% (varies by service)	3.55% to 20.05% (varies by service)
Inflation	2.30%	2.30%
Post-retirement benefit adjustments	0.00%	0.00%
Retiree Mortality	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale use a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale use a base year of 2019.

Solvency Test
Retirement Benefits
(Dollar amounts expressed in thousands)

	Actuarial Accrued Liability				Portion of Aggregate Accrued Liabilities Covered by Assets		
June 30, (1)	Active Member Contributions (2)	Retired Members & Beneficiaries (3)	Active Members (Employer Financed) (4)	Valuation Assets (5)	Active (6)	Retired (7)	ER Financed (8)
			Non-Hazardous Members				
2009	$ 793,575	$ 8,205,156	$ 1,659,819	$ 4,794,611	100.0%	48.8%	0.0%
2010	869,484	8,329,758	1,805,553	4,210,216	100.0%	40.1%	0.0%
2011	916,569	8,482,714	1,782,859	3,726,986	100.0%	33.1%	0.0%
2012	885,137	8,708,536	1,767,375	3,101,317	100.0%	25.4%	0.0%
2013	922,928	8,709,324	1,754,351	2,636,123	100.0%	19.7%	0.0%
2014	928,558	8,870,693	1,750,860	2,423,957	100.0%	16.9%	0.0%
2015	925,934	9,437,468	1,996,271	2,350,990	100.0%	15.1%	0.0%
2016	920,120	10,010,168	2,294,410	2,112,286	100.0%	11.9%	0.0%
2017	934,559	11,608,346	3,048,736	2,123,623	100.0%	10.2%	0.0%
2018	892,033	11,929,019	2,854,180	2,019,278	100.0%	9.4%	0.0%
2019	881,020	12,513,231	3,072,177	2,206,280	100.0%	10.6%	0.0%
			Hazardous Members				
2009	$ 87,780	$ 413,972	$ 172,659	$ 502,503	100.0%	100.0%	0.4%
2010	88,511	441,657	157,981	502,729	100.0%	93.8%	0.0%
2011	86,614	490,395	144,284	510,749	100.0%	86.5%	0.0%
2012	82,101	521,689	148,910	497,226	100.0%	79.6%	0.0%
2013	82,146	545,597	156,238	505,657	100.0%	77.6%	0.0%
2014	83,664	581,231	151,955	527,897	100.0%	76.4%	0.0%
2015	83,606	633,189	178,638	556,688	100.0%	74.7%	0.0%
2016	86,705	648,482	201,519	559,487	100.0%	72.9%	0.0%
2017	93,350	746,350	281,720	607,159	100.0%	68.8%	0.0%
2018	89,106	810,311	252,506	639,262	100.0%	67.9%	0.0%
2019	86,663	879,818	259,714	671,647	100.0%	66.5%	0.0%

INSURANCE BENEFITS

ACTUARIAL TABLES

Development of Unfunded Actuarial Accrued Liability
Insurance Benefits

(Dollar amounts expressed in thousands)

			June 30, 2019		
			Non-Hazardous (1)		Hazardous (2)
1.	Projected payroll of active members	$	1,437,647	$	150,446
2.	Present value of future pay	$	10,536,505	$	1,120,096
3.	Normal cost rate				
	a. Total normal cost rate		2.71%		4.92%
	b. Less: member contribution rate		-0.41%		-0.60%
	c. Employer normal cost rate		2.30%		4.32%
4.	Actuarial accrued liability for active members				
	a. Present value of future benefits	$	1,306,934	$	189,937
	b. Less: present value of future normal costs		(260,473)		(45,302)
	c. Actuarial accrued liability	$	1,046,461	$	144,635
5.	Total actuarial accrued liability				
	a. Retirees and beneficiaries	$	1,546,457	$	271,869
	b. Inactive members		140,147		10,200
	c. Active members (Item 4c)		1,046,461		144,635
	d. Total	$	2,733,065	$	426,704
6.	Actuarial value of assets	$	991,427	$	525,315
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	$	1,741,638	$	(98,611)
8.	Funded Ratio		36.3%		123.1%

Development of Actuarially Determined Contribution Rate
Insurance Benefits

		June 30, 2019	
		Non-Hazardous (1)	Hazardous (2)
1.	Total normal cost rate	2.71%	4.92%
2.	Less: member contribution rate	-0.41%	-0.60%
3.	Total employer normal cost rate	2.30%	4.32%
4.	Administrative expenses	0.06%	0.08%
5.	Net employer normal cost rate	2.36%	4.40%
6.	UAAL amortization contribution	9.67%	-5.47%
7.	Total calculated employer contribution Max (0%, item 5. + item6.)	12.03%	0.00%

Actuarial Balance Sheet

Non-Hazardous Members Insurance

(Dollar amounts expressed in thousands)

		June 30, 2019 (1)	June 30, 2018 (2)
1.	Assets - Present and Expected Future Resources		
a.	Current assets (actuarial value)	$ 991,427	$ 887,121
b.	Present value of future member contributions	$ 52,755	$ 58,117
c.	Present value of future employer contributions		
i.	Normal cost contributions	$ 207,718	$ 244,052
ii.	Unfunded accrued liability contributions	1,741,638	1,548,384
iii.	Total future employer contributions	$ 1,949,356	$ 1,792,436
d.	Total assets	$ 2,993,538	$ 2,737,674
2.	Liabilities - Present Value of Expected Future Benefit Payments		
a.	Active members		
i.	Present value of future normal costs	$ 260,473	$ 302,169
ii.	Accrued liability	1,046,461	959,552
iii.	Total present value of future benefits	$ 1,306,934	$ 1,261,721
b.	Present value of benefits payable on account of current retired members and beneficiaries	$ 1,546,457	$ 1,357,311
c.	Present value of benefits payable on account of current inactive members	$ 140,147	$ 118,642
d.	Total liabilities	$ 2,993,538	$ 2,737,674

Actuarial Balance Sheet

Hazardous Members Insurance

(Dollar amounts expressed in thousands)

	June 30, 2019 (1)	June 30, 2018 (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	$ 525,315	$ 511,441
b. Present value of future member contributions	$ 8,240	$ 9,821
c. Present value of future employer contributions		
i. Normal cost contributions	$ 37,062	$ 55,395
ii. Unfunded accrued liability contributions	(98,611)	(117,960)
iii. Total future employer contributions	$ (61,549)	$ (62,565)
d. Total assets	$ 472,006	$ 458,697
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	$ 45,302	$ 65,216
ii. Accrued liability	144,635	144,706
iii. Total present value of future benefits	$ 189,937	$ 209,922
b. Present value of benefits payable on account of current retired members and beneficiaries	$ 271,869	$ 238,885
c. Present value of benefits payable on account of current inactive members	$ 10,200	$ 9,890
d. Total liabilities	$ 472,006	$ 458,697

Reconciliation of Insurance Net Assets

(Dollar amounts expressed in thousands)[1]

	Year Ending			
	June 30, 2019		June 30, 2019	
	(1)		(2)	
	Non-Hazardous		**Hazardous**	
1. Value of assets at beginning of year	$	891,205	$	519,072
2. Revenue for the year				
a. Contributions				
i. Member contributions	$	5,963	$	934
ii. Employer contributions		173,577		3,726
iii. Other contributions (less 401h)		5,391		1,247
iii. Total	$	184,930	$	5,906
b. Income				
i. Interest, dividends, and other income	$	22,091	$	12,876
ii. Investment expenses		(5,431)		(3,981)
iii. Net	$	16,660	$	8,895
c. Net realized and unrealized gains (losses)		29,089		19,477
d. Total revenue	$	230,679	$	34,278
3. Expenditures for the year				
a. Disbursements				
i. Refunds	$	0	$	0
ii. Healthcare premium subsidies		127,221		19,281
iii. Other benefit payments[2]		(1,300)		(100)
iv. Transfers to other systems		0		0
v. Total	$	125,921	$	19,180
b. Administrative expenses and depreciation		875		117
c. Total expenditures	$	126,796	$	19,298
4. Increase in net assets (Item 2. - Item 3.)	$	103,884	$	14,981
5. Value of assets at end of year (Item 1. + Item 4.)	$	995,089	$	534,053
6. Net external cash flow				
a. Dollar amount	$	58,135	$	(13,392)
b. Percentage of market value		6.2%		-2.5%
7. Estimated annual return on net assets		5.0%		5.5%

[1] Amounts may not add due to rounding

[1] Includes 401h assets

[2] Benefit payments have been offset by Medicare Drug Reimbursements, Insurance Premiums, and Humana Gain Share Payments

Development of Actuarial Value of Assets

Non-Hazardous Members Insurance

(Dollar amounts expressed in thousands)*

	Year Ending		June 30, 2019
1.	Actuarial value of assets at beginning of year	$	887,121
2.	Market value of assets at beginning of year	$	891,205
3.	Net new investments		
	a. Contributions	$	184,930
	b. Benefit payments		(125,921)
	c. Administrative expenses		(875)
	d. Subtotal	$	58,135
4.	Market value of assets at end of year	$	995,089
5.	Net earnings (Item 4. - Item 2. - Item 3.d.)	$	45,749
6.	Assumed investment return rate for fiscal year		6.25%
7.	Expected return for immediate recognition	$	57,517
8.	Excess return for phased recognition	$	(11,768)

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2019	$	(11,768)	$	(2,354)
b.	2018		12,636		2,527
c.	2017		41,687		8,337
d.	2016		(55,901)		(11,180)
e.	2015		(43,387)		(8,677)
f.	Total			$	(11,346)

10.	Actuarial value of assets as of June 30, 2019 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	991,427
11.	Ratio of actuarial value to market value		99.6%
12.	Estimated annual return on actuarial value of assets		5.0%

* Amounts may not add due to rounding

Development of Actuarial Value of Assets

Hazardous Members Insurance

(Dollar amounts expressed in thousands)*

	Year Ending		June 30, 2019
1.	Actuarial value of assets at beginning of year	$	511,441
2.	Market value of assets at beginning of year	$	519,072
3.	Net new investments		
	a. Contributions	$	5,906
	b. Benefit payments		(19,180)
	c. Administrative expenses		(117)
	d. Subtotal	$	(13,392)
4.	Market value of assets at end of year	$	534,053
5.	Net earnings (Item 4. - Item 2. - Item 3.d.)	$	28,372
6.	Assumed investment return rate for fiscal year		6.25%
7.	Expected return for immediate recognition	$	32,024
8.	Excess return for phased recognition	$	(3,651)

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2019	$	(3,651)	$	(730)
b.	2018		12,794		2,559
c.	2017		26,956		5,391
d.	2016		(33,995)		(6,799)
e.	2015		(25,896)		(5,179)
f.	Total			$	(4,759)

10.	Actuarial value of assets as of June 30, 2019 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	525,315
11.	Ratio of actuarial value to market value		98.4%
12.	Estimated annual return on actuarial value of assets		5.4%

* Amounts may not add due to rounding

Schedule of Funding Progress
Insurance Benefits
(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Value of Assets (AVA) (2)	Actuarial Accrued Liability (AAL) (3)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2) (4)	Funded Ratio (2)/(3) (5)	Annual Covered Payroll (6)	UAAL as % of Payroll (4)/(6) (7)
			Non-Hazardous Members			
2011	$ 451,620	$ 4,280,090	$ 3,828,469	10.6%	$ 1,731,633	221.1%
2012	446,081	3,125,330	2,679,250	14.3%	1,644,897	162.9%
2013	497,584	2,128,754	1,631,170	23.4%	1,644,409	99.2%
2014	621,237	2,226,760	1,605,523	27.9%	1,577,496	101.8%
2015	695,018	2,413,705	1,718,687	28.8%	1,544,234	111.3%
2016	743,270	2,456,678	1,713,408	30.3%	1,529,249	112.0%
2017	823,918	2,683,496	1,859,578	30.7%	1,531,535	121.4%
2018	887,121	2,435,505	1,548,384	36.4%	1,471,477	105.2%
2019	991,427	2,733,065	1,741,638	36.3%	1,437,647	121.1%
			Hazardous Members			
2011	$ 329,962	$ 507,059	$ 177,097	65.1%	$ 133,054	133.1%
2012	345,574	384,592	39,018	89.9%	131,977	29.6%
2013	370,774	385,518	14,743	96.2%	132,015	11.2%
2014	419,396	396,987	(22,409)	105.6%	129,076	-17.4%
2015	451,514	374,904	(76,610)	120.4%	128,680	-59.5%
2016	473,160	377,745	(95,415)	125.3%	147,563	-64.7%
2017	493,458	419,439	(74,019)	117.6%	162,418	-45.6%
2018	511,441	393,481	(117,960)	130.0%	158,213	-74.6%
2019	525,315	426,704	(98,611)	123.1%	150,446	-65.5%
			Total KERS Members			
2011	$ 781,582	$ 4,787,149	$ 4,005,567	16.3%	$ 1,864,687	214.8%
2012	791,655	3,509,922	2,718,267	22.6%	1,776,874	153.0%
2013	868,358	2,514,272	1,645,914	34.5%	1,776,424	92.7%
2014	1,040,633	2,623,747	1,583,114	39.7%	1,706,572	92.8%
2015	1,146,532	2,788,609	1,642,077	41.1%	1,672,914	98.2%
2016	1,216,430	2,834,423	1,617,993	42.9%	1,676,812	96.5%
2017	1,317,376	3,102,935	1,785,559	42.5%	1,693,953	105.4%
2018	1,398,562	2,828,986	1,430,424	49.4%	1,629,690	87.8%
2019	1,516,742	3,159,769	1,643,027	48.0%	1,588,093	103.5%

Solvency Test
Insurance Benefits
(Dollar amounts expressed in thousands)

	Actuarial Accrued Liability				Portion of Aggregate Accrued Liabilities Covered by Assets		
June 30,	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed)	Valuation Assets	Active	Retired	ER Financed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Non-Hazardous Members							
2009	$ -	$ 2,861,867	$ 1,645,458	$ 534,173	100.0%	18.7%	0.0%
2010	-	2,744,534	1,721,602	471,342	100.0%	17.2%	0.0%
2011	-	2,568,003	1,712,087	451,620	100.0%	17.6%	0.0%
2012	-	1,924,069	1,201,262	446,081	100.0%	23.2%	0.0%
2013	-	1,338,773	789,981	497,584	100.0%	37.2%	0.0%
2014	-	1,425,605	801,155	621,237	100.0%	43.6%	0.0%
2015	-	1,428,350	985,355	695,018	100.0%	48.7%	0.0%
2016	-	1,483,636	973,042	743,270	100.0%	50.1%	0.0%
2017	-	1,575,294	1,108,202	823,918	100.0%	52.3%	0.0%
2018	-	1,475,953	959,552	887,121	100.0%	60.1%	0.0%
2019	-	1,686,604	1,046,461	991,427	100.0%	58.8%	0.0%
Hazardous Members							
2009	$ -	$ 242,123	$ 249,009	$ 301,635	100.0%	100.0%	23.9%
2010	-	268,511	224,787	314,427	100.0%	100.0%	20.4%
2011	-	285,540	221,519	329,962	100.0%	100.0%	20.1%
2012	-	196,579	188,013	345,574	100.0%	100.0%	79.2%
2013	-	202,032	183,486	370,774	100.0%	100.0%	92.0%
2014	-	206,477	190,509	419,396	100.0%	100.0%	100.0%
2015	-	221,115	153,789	451,514	100.0%	100.0%	100.0%
2016	-	228,361	149,384	473,160	100.0%	100.0%	100.0%
2017	-	243,816	175,623	493,458	100.0%	100.0%	100.0%
2018	-	248,775	144,706	511,441	100.0%	100.0%	100.0%
2019	-	282,069	144,635	525,315	100.0%	100.0%	100.0%

SECTION 4

MEMBERSHIP INFORMATION

Membership Tables

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Summary of Membership Data

(Total dollar amounts expressed in thousands)

	Non-Hazardous June 30, 2019 (1)	Hazardous June 30, 2019 (2)	Total June 30, 2019 (3)	Total June 30, 2018 (4)
1. Active members				
a. Males	12,936	2,484	15,420	16,080
b. Females	20,760	1,221	21,981	22,988
c. Total members	33,696	3,705	37,401	39,068
d. Total annualized prior year salaries	$ 1,437,647	$ 150,446	$ 1,588,093	$ 1,629,690
e. Average salary[2]	$ 42,665	$ 40,606	$ 42,461	$ 41,714
f. Average age	45.4	39.8	44.9	44.7
g. Average service	11.0	7.3	10.6	10.4
h. Member contributions with interest	$ 881,020	$ 86,663	$ 967,683	$ 981,139
i. Average contributions with interest[2]	$ 26,146	$ 23,391	$ 25,873	$ 25,114
2. Vested inactive members[1]				
a. Number	31,544	2,178	33,722	14,116
b. Total annual deferred benefits	$ 82,692	$ 4,407	$ 87,099	$ 78,039
c. Average annual deferred benefit[2]	$ 2,621	$ 2,023	$ 2,583	$ 5,528
d. Average age at the valuation date	51.3	46.5	51.0	48.5
3. Nonvested inactive members[1]				
a. Number	20,370	4,070	24,440	42,046
b. Total member contributions with interest	$ 35,078	$ 7,132	$ 42,210	$ 67,161
c. Average contributions with interest[2]	$ 1,722	$ 1,752	$ 1,727	$ 1,597
4. Service retirees				
a. Number	40,519	3,913	44,432	43,462
b. Total annual benefits	$ 870,243	$ 61,454	$ 931,697	$ 915,193
c. Average annual benefit[2]	$ 21,477	$ 15,705	$ 20,969	$ 21,057
d. Average age at the valuation date	69.4	64.8	69.0	68.6
5. Disabled retirees				
a. Number	1,949	162	2,111	2,129
b. Total annual benefits	$ 25,745	$ 1,541	$ 27,286	$ 27,229
c. Average annual benefit[2]	$ 13,209	$ 9,510	$ 12,925	$ 12,790
d. Average age at the valuation date	65.8	60.3	65.3	65.1
6. Beneficiaries				
a. Number	4,942	462	5,404	5,305
b. Total annual benefits	$ 72,718	$ 4,528	$ 77,246	$ 74,578
c. Average annual benefit[2]	$ 14,714	$ 9,801	$ 14,294	$ 14,058
d. Average age at the valuation date	70.6	66.0	70.2	70.2

[1] Vested inactive member section includes Tier 1 members eligible for a benefit equal to the actuarially equivalent of two times the member's contribution balance. These members were included in the nonvested inactive member section in 2018.

[2] Average dollar amounts shown are expresed to the dollar.

Summary of Historical Active Membership

	Active Members		Covered Payroll[1]		Average Annual Pay	
June 30,	Number	Percent Increase /(Decrease)	Amount in Thousands	Percent Increase /(Decrease)	Amount	Percent Increase /(Decrease)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Non-Hazardous Members			
2010	47,090		$ 1,815,146		$ 38,546	
2011	46,617	-1.0%	1,731,633	-4.6%	37,146	-3.6%
2012	42,196	-9.5%	1,644,897	-5.0%	38,982	4.9%
2013	42,226	0.1%	1,644,409	0.0%	38,943	-0.1%
2014	40,365	-4.4%	1,577,496	-4.1%	39,081	0.4%
2015	39,056	-3.2%	1,544,234	-2.1%	39,539	1.2%
2016	37,779	-3.3%	1,529,249	-1.0%	40,479	2.4%
2017	37,234	-1.4%	1,531,535	0.1%	41,133	1.6%
2018	35,139	-5.6%	1,471,477	-3.9%	41,876	1.8%
2019	33,696	-4.1%	1,437,647	-2.3%	42,665	1.9%
			Hazardous Members			
2010	4,291		$ 143,558		$ 33,456	
2011	4,291	0.0%	133,054	-7.3%	31,008	-7.3%
2012	4,086	-4.8%	131,977	-0.8%	32,300	4.2%
2013	4,127	1.0%	132,015	0.0%	31,988	-1.0%
2014	4,024	-2.5%	129,076	-2.2%	32,077	0.3%
2015	3,886	-3.4%	128,680	-0.3%	33,114	3.2%
2016	3,959	1.9%	147,563	14.7%	37,273	12.6%
2017	4,047	2.2%	162,418	10.1%	40,133	7.7%
2018	3,929	-2.9%	158,213	-2.6%	40,268	0.3%
2019	3,705	-5.7%	150,446	-4.9%	40,606	0.8%

[1] Covered payroll is the annualized, projected compensation for the following year and does not include payroll attributable to working retirees.

Distribution of Active Members by Age and by Years of Service

Non-Hazardous Members

	Years of Credited Service												
Attained Age	0 Count & Avg. Comp.	1 Count & Avg. Comp.	2 Count & Avg. Comp.	3 Count & Avg. Comp.	4 Count & Avg. Comp.	5-9 Count & Avg. Comp.	10-14 Count & Avg. Comp.	15-19 Count & Avg. Comp.	20-24 Count & Avg. Comp.	25-29 Count & Avg. Comp.	30-34 Count & Avg. Comp.	35 & Over Count & Avg. Comp.	Total Count & Avg. Comp.
Under 20	20	1	1	0	0	0	0	0	0	0	0	0	22
	$18,784	$24,759	$16,623	$0	$0	$0	$0	$0	$0	$0	$0	$0	$18,958
20-24	423	258	108	35	17	5	1	0	0	0	0	0	847
	$23,540	$31,767	$32,136	$32,416	$33,258	$39,887	$38,840	$0	$0	$0	$0	$0	$27,819
25-29	536	529	468	372	280	330	4	0	0	0	0	0	2,519
	$26,221	$32,599	$35,103	$36,657	$36,318	$37,425	$40,699	$0	$0	$0	$0	$0	$33,365
30-34	384	375	348	337	337	1,203	282	3	0	0	0	0	3,269
	$27,055	$35,108	$35,461	$37,295	$40,029	$40,004	$41,508	$36,460	$0	$0	$0	$0	$37,287
35-39	318	276	291	279	265	1,171	1,269	387	32	0	0	0	4,288
	$28,299	$35,047	$38,252	$42,955	$39,281	$41,910	$45,177	$45,773	$46,655	$0	$0	$0	$41,467
40-44	249	245	229	245	199	865	1,108	1,193	467	15	0	0	4,815
	$30,926	$36,510	$39,514	$43,742	$38,154	$41,856	$45,533	$48,950	$50,919	$59,751	$0	$0	$44,389
45-49	252	204	240	203	196	784	900	1,119	954	282	17	2	5,153
	$29,670	$35,596	$35,774	$38,451	$38,967	$41,171	$45,476	$49,313	$51,939	$54,405	$57,977	$133,510	$45,274
50-54	196	176	150	177	139	663	853	817	802	448	102	11	4,534
	$29,962	$38,043	$40,329	$40,880	$38,385	$40,191	$44,432	$47,137	$51,635	$56,646	$61,120	$59,567	$45,859
55-59	143	123	140	116	123	637	828	763	641	310	129	24	3,977
	$27,748	$35,626	$37,692	$43,818	$40,144	$39,823	$43,650	$44,267	$50,171	$54,396	$62,038	$74,018	$44,690
60-64	69	89	100	95	64	446	644	610	445	224	69	25	2,880
	$38,092	$39,019	$35,603	$48,667	$39,003	$39,443	$44,231	$44,818	$47,699	$53,228	$63,463	$64,340	$44,907
65 & Over	25	38	37	39	46	241	321	320	171	78	39	37	1,392
	$31,715	$46,341	$47,430	$71,180	$42,354	$42,441	$46,552	$46,930	$53,925	$53,450	$63,742	$75,562	$48,775
Total	2,615	2,314	2,112	1,898	1,666	6,345	6,210	5,212	3,512	1,357	356	99	33,696
	$27,616	$34,927	$36,772	$40,866	$38,764	$40,673	$44,780	$47,207	$50,922	$54,953	$62,044	$71,748	$42,665

Distribution of Active Members by Age and by Years of Service

Hazardous Members

	Years of Credited Service												
Attained Age	0 Count & Avg. Comp.	1 Count & Avg. Comp.	2 Count & Avg. Comp.	3 Count & Avg. Comp.	4 Count & Avg. Comp.	5-9 Count & Avg. Comp.	10-14 Count & Avg. Comp.	15-19 Count & Avg. Comp.	20-24 Count & Avg. Comp.	25-29 Count & Avg. Comp.	30-34 Count & Avg. Comp.	35 & Over Count & Avg. Comp.	Total Count & Avg. Comp.
Under 20	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0
20-24	141 $26,182	61 $37,383	29 $40,726	3 $36,740	1 $33,814	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	235 $31,052
25-29	169 $25,107	132 $36,663	97 $39,978	88 $41,427	70 $42,344	81 $43,798	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	637 $36,292
30-34	94 $24,387	67 $36,617	50 $39,382	60 $42,064	52 $39,846	192 $42,280	34 $45,625	0 $0	0 $0	0 $0	0 $0	0 $0	549 $38,214
35-39	37 $24,752	35 $37,999	31 $38,943	28 $43,842	30 $40,348	142 $43,991	183 $44,318	39 $50,541	1 $45,503	0 $0	0 $0	0 $0	526 $42,328
40-44	35 $25,606	33 $37,329	21 $38,744	23 $41,720	18 $40,269	92 $44,823	118 $46,080	113 $49,293	16 $51,343	0 $0	0 $0	0 $0	469 $43,878
45-49	32 $26,967	28 $36,630	25 $38,901	31 $38,572	24 $39,436	74 $40,622	115 $47,949	100 $49,724	34 $53,672	5 $59,273	0 $0	0 $0	468 $44,054
50-54	22 $21,738	15 $36,185	20 $41,367	22 $43,745	19 $39,865	75 $42,573	92 $43,117	70 $45,911	16 $54,713	7 $62,962	1 $54,115	0 $0	359 $42,652
55-59	17 $24,727	15 $40,325	9 $36,893	15 $35,801	13 $51,025	62 $39,952	58 $47,673	48 $48,721	12 $54,158	3 $50,756	1 $53,876	1 $112,168	254 $43,726
60-64	4 $29,609	2 $28,534	6 $44,501	6 $45,226	10 $39,398	39 $39,477	40 $42,373	38 $49,547	6 $48,062	2 $77,564	0 $0	0 $0	153 $43,586
65 & Over	0 $0	3 $37,045	1 $32,637	3 $71,849	1 $37,988	18 $40,715	18 $43,134	9 $45,236	0 $0	1 $96,877	1 $93,179	0 $0	55 $45,523
Total	551 $25,262	391 $37,024	289 $39,725	279 $41,752	238 $41,194	775 $42,560	658 $45,313	417 $48,815	85 $53,006	18 $63,409	3 $67,057	1 $112,168	3,705 $40,606

Distribution of Annuitant Monthly Benefit by Status and Age
Non-Hazardous Retirees and Beneficiaries

(Dollar amounts expressed in thousands)

	Retirement		Disability		Survivors & Beneficiaries		Total	
Current Age	Number of Annuitants	Total Annual Benefit Amount	Number of Annuitants	Total Annual Benefit Amount	Number of Annuitants	Total Annual Benefit Amount	Number of Annuitants	Total Annual Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Under 50	506	$ 12,354	100	$ 1,423	497	$ 5,816	1,103	$ 19,593
50 - 54	1,627	43,279	179	2,717	175	2,231	1,981	48,227
55 - 59	3,771	95,985	268	3,709	317	4,265	4,356	103,959
60 - 64	6,760	160,871	382	5,292	503	7,211	7,645	173,374
65 - 69	9,692	208,022	385	5,049	660	11,317	10,737	224,388
70 - 74	8,242	174,563	289	3,500	688	11,713	9,219	189,776
75 - 79	4,838	94,180	183	2,291	696	11,169	5,717	107,640
80 - 84	2,758	48,308	108	1,198	591	9,160	3,457	58,666
85 - 89	1,478	21,750	43	482	467	6,369	1,988	28,601
90 And Over	847	10,931	12	86	348	3,467	1,207	14,484
Total	**40,519**	**$ 870,243**	**1,949**	**$ 25,745**	**4,942**	**$ 72,718**	**47,410**	**$ 968,706**

Distribution of Annuitant Monthly Benefit by Status and Age

Hazardous Retirees and Beneficiaries

(Dollar amounts expressed in thousands)

	Retirement		Disability		Survivors & Beneficiaries		Total	
Current Age (1)	Number of Annuitants (2)	Total Annual Benefit Amount (3)	Number of Annuitants (4)	Total Annual Benefit Amount (5)	Number of Annuitants (6)	Total Annual Benefit Amount (7)	Number of Annuitants (8)	Total Annual Benefit Amount (9)
Under 50	282	$ 5,558	25	$ 365	60	$ 576	367	$ 6,499
50 - 54	381	7,493	24	209	21	252	426	7,954
55 - 59	527	9,727	31	345	53	561	611	10,633
60 - 64	699	12,008	31	252	44	452	774	12,712
65 - 69	830	11,977	27	231	81	984	938	13,192
70 - 74	716	9,816	13	96	70	592	799	10,504
75 - 79	290	3,262	3	11	68	632	361	3,905
80 - 84	137	1,218	7	29	34	301	178	1,548
85 - 89	39	237	1	3	25	104	65	344
90 And Over	12	159	0	0	6	75	18	234
Total	**3,913**	**$ 61,454**	**162**	**$ 1,541**	**462**	**$ 4,528**	**4,537**	**$ 67,523**

Non-Hazardous Retired Lives Summary

	Male Lives		Female Lives		Total	
Form of Payment	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Basic	4,319	$ 7,740,649	12,465	$ 18,184,939	16,784	$ 25,925,588
Joint & Survivor:						
100% to Beneficiary	2,460	4,511,306	1,183	1,495,741	3,643	6,007,047
66 2/3% to Beneficiary	827	2,315,732	594	1,146,183	1,421	3,461,915
50% to Beneficiary	1,149	2,887,093	1,539	3,051,864	2,688	5,938,957
Pop-up Option	4,131	9,948,117	3,882	7,494,847	8,013	17,442,964
Social Security Option:						
Age 62 Basic	398	817,385	947	1,550,362	1,345	2,367,747
Age 62 Survivorship	776	1,549,879	607	974,546	1,383	2,524,425
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	0	0	0	0
10 Years Certain	0	0	0	0	0	0
10 Years Certain & Life	984	1,710,181	2,285	3,467,023	3,269	5,177,204
15 Years Certain & Life	448	716,349	646	963,846	1,094	1,680,194
20 Years Certain & Life	440	968,550	643	1,011,012	1,083	1,979,562
Refund	0	0	0	0	0	0
Partial Lump Sum Option (PLSO):						
12 Month Basic	81	133,879	276	421,659	357	555,538
24 Month Basic	31	37,757	150	197,234	181	234,991
36 Month Basic	128	117,986	378	288,711	506	406,697
12 Month Survivor	97	204,353	101	172,917	198	377,270
24 Month Survivor	75	117,772	71	105,263	146	223,035
36 Month Survivor	209	236,029	148	126,525	357	362,554
Total:	16,553	$ 34,013,015	25,915	$ 40,652,673	42,468	$ 74,665,689

Hazardous Retired Lives Summary

	Male Lives		Female Lives		Total	
Form of Payment	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Basic	670	$ 761,411	532	$ 585,831	1,202	$ 1,347,242
Joint & Survivor:						
100% to Beneficiary	373	449,276	48	53,254	421	502,530
66 2/3% to Beneficiary	123	158,590	32	38,946	155	197,536
50% to Beneficiary	180	288,551	73	113,086	253	401,637
Pop-up Option	955	1,485,282	200	275,201	1,155	1,760,483
Social Security Option:						
Age 62 Basic	56	65,007	33	29,797	89	94,804
Age 62 Survivorship	137	170,568	19	16,475	156	187,043
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	0	0	0	0
10 Years Certain	51	78,847	14	17,451	65	96,298
10 Years Certain & Life	116	143,299	76	69,243	192	212,541
15 Years Certain & Life	50	65,260	25	25,079	75	90,339
20 Years Certain & Life	64	89,501	35	47,625	99	137,126
Refund	0	0	0	0	0	0
Partial Lump Sum Option (PLSO):						
12 Month Basic	10	10,601	13	10,878	23	21,479
24 Month Basic	13	12,467	9	7,948	22	20,415
36 Month Basic	39	33,910	23	20,016	62	53,925
12 Month Survivor	20	26,786	5	4,810	25	31,596
24 Month Survivor	18	25,731	9	11,029	27	36,760
36 Month Survivor	39	39,135	15	18,695	54	57,830
Total:	2,914	$ 3,904,221	1,161	$ 1,345,364	4,075	$ 5,249,584

Non-Hazardous Beneficiary Lives Summary

	Male Lives		Female Lives		Total	
Form of Payment	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Basic	17	$ 9,432	35	$ 37,877	52	$ 47,309
Joint & Survivor:						
100% to Beneficiary	360	309,552	1,452	1,627,370	1,812	1,936,922
66 2/3% to Beneficiary	85	88,330	298	377,056	383	465,386
50% to Beneficiary	173	135,088	443	366,334	616	501,422
Pop-up Option	223	343,824	774	1,358,451	997	1,702,275
Social Security Option:						
Age 62 Basic	1	1,293	11	10,670	12	11,964
Age 62 Survivorship	74	102,249	331	575,164	405	677,413
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	2	611	2	611
5 Years Certain	32	43,527	52	46,955	84	90,483
10 Years Certain	84	75,334	98	60,753	182	136,086
10 Years Certain & Life	33	32,221	44	40,611	77	72,832
15 Years Certain & Life	16	21,553	43	44,652	59	66,205
20 Years Certain & Life	23	47,100	63	107,041	86	154,141
Refund	0	0	0	0	0	0
Partial Lump Sum Option (PLSO):						
12 Month Basic	0	0	1	1,792	1	1,792
24 Month Basic	0	0	0	0	0	0
36 Month Basic	0	0	2	3,357	2	3,357
12 Month Survivor	7	11,919	28	48,594	35	60,513
24 Month Survivor	12	17,120	28	25,361	40	42,481
36 Month Survivor	21	16,087	76	72,561	97	88,648
Total:	1,161	$ 1,254,628	3,781	$ 4,805,211	4,942	$ 6,059,839

Hazardous Beneficiary Lives Summary

	Male Lives		Female Lives		Total	
Form of Payment	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Basic	2	$ 1,052	7	$ 4,483	9	$ 5,535
Joint & Survivor:						
100% to Beneficiary	15	8,098	146	106,656	161	114,754
66 2/3% to Beneficiary	0	0	20	10,715	20	10,715
50% to Beneficiary	4	2,769	33	11,654	37	14,423
Pop-up Option	15	15,130	109	113,267	124	128,397
Social Security Option:						
Age 62 Basic	0	0	1	18	1	18
Age 62 Survivorship	0	0	41	42,985	41	42,985
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	5	4,499	5	4,499
10 Years Certain	1	1,150	16	14,845	17	15,994
10 Years Certain & Life	3	967	5	3,181	8	4,148
15 Years Certain & Life	2	819	4	2,627	6	3,445
20 Years Certain & Life	1	2,658	7	6,382	8	9,040
Refund	0	0	0	0	0	0
Partial Lump Sum Option (PLSO):						
12 Month Basic	0	0	0	0	0	0
24 Month Basic	0	0	0	0	0	0
36 Month Basic	0	0	1	126	1	126
12 Month Survivor	0	0	3	2,912	3	2,912
24 Month Survivor	1	995	3	2,022	4	3,017
36 Month Survivor	3	1,165	14	16,150	17	17,315
Total:	47	$ 34,803	415	$ 342,521	462	$ 377,324

Schedule of Retirants Added to And Removed from Rolls

(Dollar amounts except average allowance expressed in thousands)

	Added to Rolls	Removed from Rolls	Rolls End of the Year		% Increase	Average
Year Ended	Number	Number	Number	Annual Benefits	in Annual Benefit	Annual Benefit
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Non-Hazardous			
2010	1,162	1,100	37,945	$ 801,882		$ 21,133
2011	1,592	940	38,597	821,197	2.4%	21,276
2012	1,707	1,078	39,226	844,881	2.9%	21,539
2013	1,982	1,014	40,194	872,140	3.2%	21,698
2014	2,067	1,038	41,223	866,047	-0.7%	21,009
2015	2,140	1,094	42,269	883,578	2.0%	20,904
2016	2,441	706	44,004	934,930	5.8%	21,246
2017	2,181	1,269	44,916	921,302	-1.5%	20,512
2018	2,853	1,243	46,526	952,951	3.4%	20,482
2019	2,226	1,342	47,410	968,706	1.7%	20,433
			Hazardous			
2010	282	95	2,835	$ 41,115		14,503
2011	288	59	3,064	45,609	10.9%	14,885
2012	243	54	3,253	49,231	7.9%	15,134
2013	229	52	3,430	51,122	3.8%	14,904
2014	256	66	3,620	54,272	6.2%	14,992
2015	203	65	3,758	56,431	4.0%	15,016
2016	237	29	3,966	59,001	4.6%	14,877
2017	206	79	4,093	59,162	0.3%	14,454
2018	321	44	4,370	64,050	8.3%	14,657
2019	227	60	4,537	67,523	5.4%	14,883

SECTION 5

ASSESSMENT AND DISCLOSURE OF RISK

Risks Associated with Measuring the Accrued Liability And Actuarially Determined Contribution

(As Required by ASOP No. 51)

The determination of KERS's accrued liability and actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. The risk measures illustrated in this section are intended to aid stakeholders in understanding the effects of future experience differing from the assumptions used in performing an actuarial valuation. These risk measures may also help with illustrating the potential volatility in the funded status and actuarially determined contributions that result from differences between actual experience and the expected experience based on the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience (economic and demographic) differing from the assumptions, changes in assumptions due to changing conditions, changes in contribution requirements due to modifications to the funding policy, and changes in the liability and cost due to changes in plan provisions or applicable law. The scope of this actuarial valuation does not include any analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the System's future financial condition include:

- Investment risk – actual investment returns may differ from expected returns;
- Longevity risk – members may live longer or shorter than expected and receive pensions for a time period different than assumed;
- Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future contributions differing from expected;
- Salary and payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liabilities or contributions differing from expected;
- Asset/Liability mismatch – changes in assets may be inconsistent with changes in liabilities, thereby altering the relative difference between the assets and liabilities which may alter the funded status and contribution requirements;
- Contribution risk – actual contributions may differ from expected future contributions (for example, actual contributions not being paid in accordance with the System's funding policy, withdrawal liability assessments or other anticipated payments to the plan are not being paid, or material changes occurring in the anticipated number of covered employees, covered payroll, or another relevant contribution base).

Effects of certain experience can generally be anticipated. For example, if investment returns since the most recent actuarial valuation is less (or more) than the assumed rate of return, then the funded status of the plan can be expected to decrease (or increase) more than anticipated.

The contribution rate in this report was established in accordance with applicable Statutes and assumptions adopted by the Board. However, stakeholders should be aware that the scheduled contribution rates specified in State Code do not necessarily guarantee that the contribution requirements will not increase in a future year.

Employer Risk with Contribution Rates

Currently KRS collects contributions from participating employers based on the employer's total payroll of employees who are earning benefits in KERS (i.e. covered payroll). The actuarially determined contribution rate is comprised of two components - the normal cost rate (to pay for the benefits accruing in the next year) and the unfunded amortization (to pay for the benefits accrued by members in previous years). The unfunded amortization is calculated by first determining the dollar amount necessary to pay for the unfunded liability based on KRS's funding policy, and then by dividing that dollar amount by expected covered payroll to convert that contribution requirement to a percentage of payroll (i.e. a contribution rate).

As the contribution requirement, as a percentage of payroll, increases then there is increased incentive for participating employers to make deliberate business action to reduce their payroll reported to the System in order to reduce their pension cost.

Plan Specific Risk Measures

Risks faced by a pension plan evolve over time. A relatively new plan with virtually no assets and paying few benefits will experience lower investment risk than a mature plan with a significant amount of assets and large number of members receiving benefits. There are a few measures that can assist stakeholders in understanding and comparing the maturity of a plan to other systems, which include:

- Ratio of market value of assets to payroll: The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. If assets are approximately the same as covered payroll, an investment return that is 5% different than assumed would equal 5% of payroll. In another example, if the assets are approximately twice as large as covered payroll, an investment return that is 5% different than assumed would equal 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- Ratio of actuarial accrued liability to payroll: The ratio of actuarial accrued liability to payroll can be used as a measure to indicate the potential volatility of contributions due to volatility in the liability experience. For instance, if the actuarial accrued liability is 5 times the size of the covered payroll, then a change in the liability that is 2% different than expected would be a change in magnitude that is 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- Percentage of Expected Contributions Actually Received: This measure identifies the percentage difference between the contributions the fund expects to receive during the fiscal year to and actual contributions received by the fund during the fiscal year. A percentage that is less than 100% means that actual contributions the fund received were less than the expected contributions determined by a prior actuarial valuation. On the other hand, a percentage that is greater than 100% means that actual contributions the fund received were more than the expected contributions.

- <u>Ratio of active to retired members</u>: A relatively mature open plan is likely to have close to the same number of actives to retirees resulting in a ratio that is around 1.0. On the other hand, a super-mature plan, or a plan that is closed to new entrants will have more retirees than active members resulting in a ratio below 1.0. As this ratio declines, a larger portion of the total actuarial accrued liability in the System is attributable to retirees. This metric also typically moves in tandem with the liability to payroll metric, which provides an indication of potential contribution volatility.

The following tables provide a summary of these measures for KERS Non-Hazardous and Hazardous Funds for the current year and the prior four years so stakeholders can identify how these measures are trending. While ASOP No. 51 requires this disclosure with respect to only the retirement funds, we have included this information for the insurance funds for completeness.

KERS Non-Hazardous

	Retirement Fund					Insurance Fund				
	June 30,					June 30,				
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015
Ratio of the market value of assets to total payroll	1.55	1.36	1.34	1.28	1.49	0.69	0.61	0.53	0.45	0.45
Ratio of actuarial accrued liability to payroll	11.45	10.65	10.18	8.65	8.00	1.90	1.66	1.75	1.61	1.56
Ratio of net cash flow to market value of assets	5.2%	-9.8%	-5.5%	-17.0%	-12.9%	5.8%	1.1%	3.3%	1.6%	2.1%
Percentage of Expected Contribution Actually Received	91% [1]	93%	104%	95%	102%	95% [1]	99%	100%	106%	101%
Ratio of actives to retirees and beneficiaries	0.71	0.76	0.83	0.86	0.92					

[1] Expected contribution for FYE2019 based on the actuarially determined contribution rate of 83.43% from the June 30, 2017 valuation and expected compensation based on census data from the June 30, 2018 valuation

KERS Hazardous

	Retirement Fund					Insurance Fund				
	June 30,					June 30,				
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015
Ratio of the market value of assets to total payroll	4.53	4.08	3.70	3.56	4.28	3.55	3.28	3.01	2.99	3.43
Ratio of actuarial accrued liability to payroll	8.15	7.28	6.90	6.35	6.96	2.84	2.49	2.58	2.56	2.91
Ratio of net cash flow to market value of assets	-0.1%	-1.2%	1.0%	-4.5%	-3.3%	-2.5%	-2.4%	-2.3%	0.0%	-0.4%
Percentage of Expected Contribution Actually Received	102% [1]	95%	116%	103%	129%	96% [1]	190%	111%	166%	105%
Ratio of actives to retirees and beneficiaries	0.82	0.90	0.99	1.00	1.03					

[1] Expected contribution for FYE2019 based on the actuarially determined contribution rate of 36.85% from the June 30, 2017 valuation and expected compensation based on census data from the June 30, 2018 valuation

APPENDIX A

ACTUARIAL ASSUMPTIONS AND METHODS

Summary of Actuarial Methods and Assumptions

The following presents a summary of the actuarial assumptions and methods used in the valuation of the Kentucky Employees Retirement System.

In general, the assumptions and methods used in the valuation are based on the actuarial experience study for the five-year period ending June 30, 2018 and adopted by the Board in April 2019.

Investment return rate:

Assumed annual rate of 5.25% net of investment expenses for the non-hazardous retirement fund
Assumed annual rate of 6.25% net of investment expenses for the hazardous retirement fund, non-hazardous insurance fund, and hazardous insurance fund

Price Inflation:

Assumed annual rate of 2.30%

Payroll Growth Assumption (used for amortization of unfunded accrued liabilities):

Assumed annual rate of 0.00%

Rates of Annual Salary Increase:

Assumed rates of annual salary increases are shown below.

Service Years	Annual Rates of Salary					
	Merit & Seniority		Price Inflation & Productivity		Total Increase	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous
0	12.00%	16.50%	3.30%	3.55%	15.30%	20.05%
1	3.50%	4.00%	3.30%	3.55%	6.80%	7.55%
2	2.75%	3.00%	3.30%	3.55%	6.05%	6.55%
3	2.50%	3.00%	3.30%	3.55%	5.80%	6.55%
4	2.00%	2.00%	3.30%	3.55%	5.30%	5.55%
5	1.50%	1.50%	3.30%	3.55%	4.80%	5.05%
6	1.25%	1.00%	3.30%	3.55%	4.55%	4.55%
7	1.00%	0.50%	3.30%	3.55%	4.30%	4.05%
8	0.75%	0.50%	3.30%	3.55%	4.05%	4.05%
9	0.50%	0.00%	3.30%	3.55%	3.80%	3.55%
10	0.50%	0.00%	3.30%	3.55%	3.80%	3.55%
11 & Over	0.00%	0.00%	3.30%	3.55%	3.30%	3.55%

Retirement rates:

Assumed annual rates of retirement are shown below. Rates are only applicable for members who are eligible for a service retirement.

	Non-Hazardous					Hazardous			
	Normal Retirement		Early Retirement[1]			Members participating before 9/1/2008[2]		Members participating between 9/1/2008 and 1/1/2014[3]	Members participating after 1/1/2014[3]
Age	Male	Female	Male	Female	Service	Age 55-61	Age 62+		
Under 45	20.0%	33.0%			5	10.0%	35.0%		
45	21.0%	33.0%			6	10.0%	35.0%		
46	22.0%	33.0%			7	10.0%	35.0%		
47	23.0%	33.0%			8	10.0%	35.0%		
48	24.0%	33.0%			9	10.0%	35.0%		
49	25.0%	33.0%			10	10.0%	35.0%		
50	26.0%	33.0%			11	10.0%	35.0%		
51	27.0%	33.0%			12	10.0%	35.0%		
52	28.0%	33.0%			13	10.0%	35.0%		
53	29.0%	33.0%			14	10.0%	35.0%		
54	30.0%	33.0%			15	10.0%	35.0%		
55	30.0%	33.0%	5.0%	5.0%	16	10.0%	35.0%		
56	30.0%	33.0%	5.0%	5.0%	17	10.0%	35.0%		
57	30.0%	33.0%	5.0%	5.0%	18	10.0%	35.0%		
58	30.0%	33.0%	5.0%	5.0%	19	10.0%	35.0%		
59	30.0%	33.0%	5.0%	5.0%	20	50.0%	50.0%		
60	30.0%	33.0%	5.0%	8.0%	21	32.0%	32.0%		
61	30.0%	33.0%	8.0%	9.0%	22	32.0%	32.0%		
62	35.0%	35.0%	15.0%	20.0%	23	32.0%	32.0%		
63	30.0%	33.0%	15.0%	18.0%	24	32.0%	32.0%		
64	30.0%	33.0%	15.0%	16.0%	25	32.0%	32.0%	25.6%	16.0%
65	30.0%	33.0%			26	32.0%	32.0%	25.6%	16.0%
66	30.0%	33.0%			27	32.0%	32.0%	25.6%	16.0%
67	30.0%	33.0%			28	32.0%	32.0%	25.6%	16.0%
68	30.0%	33.0%			29	32.0%	32.0%	25.6%	16.0%
69	30.0%	33.0%			30+	32.0%	32.0%	25.6%	100.0%
70	30.0%	33.0%							
71	30.0%	33.0%							
72	30.0%	33.0%							
73	30.0%	33.0%							
74	30.0%	33.0%							
75	100.0%	100.0%							

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[1] *The annual rate of retirement is 12% for male members and 14% for female members with 25-26 years of service.*

[2] *The annual rate of retirement is 100% at age 65.*

[3] *The annual rate of retirement is 100% at age 60.*

Non-Hazardous System: For members hired after 7/1/2003, the rates shown above are multiplied by 80% if the member is under age 65 to reflect the different retiree health insurance benefit.

Hazardous System: For members hired after 7/1/2003 and prior to 9/1/2008, the rates shown above are multiplied by 80% if the member is under age 65 to reflect the different retiree health insurance benefit.

Disability rates:

An abbreviated table with assumed rates of disability is shown below.

	Non-Hazardous		Hazardous	
Age	Male	Female	Male	Female
20	0.03%	0.03%	0.05%	0.05%
30	0.06%	0.06%	0.08%	0.08%
40	0.12%	0.12%	0.18%	0.18%
50	0.34%	0.34%	0.50%	0.50%
60	0.88%	0.88%	1.32%	1.32%

Withdrawal rates (for causes other than disability and retirement):

Assumed annual rates of withdrawal are shown below and include pre-retirement mortality rates as described on the next page.

Service Years	Annual Rates of Withdrawal	
	Non-Hazardous	Hazardous
1	20.00%	25.00%
2	16.45%	19.68%
3	13.39%	15.12%
4	11.61%	12.45%
5	10.34%	10.56%
6	9.35%	9.09%
7	8.55%	7.89%
8	7.87%	6.87%
9	7.28%	5.99%
10	6.76%	5.22%
11	6.30%	4.53%
12	5.88%	3.90%
13	5.49%	3.33%
14	5.14%	2.80%
15	4.81%	2.31%
16	4.51%	1.86%
17	4.22%	1.43%
18	3.96%	1.03%
19	3.70%	0.66%
20	3.47%	0.30%
21	3.24%	0.00%
22	3.02%	0.00%
23	2.82%	0.00%
24	2.62%	0.00%
25	2.43%	0.00%
26 & Over	0.00%	0.00%

Mortality Assumption:

Pre-retirement mortality: PUB-2010 General Mortality table, for the Non-Hazardous System, and the PUB-2010 Public Safety Mortality table for the Hazardous System, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010.

Post-retirement mortality (non-disabled): System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.

The following table provides the life expectancy for a non-disabled retiree in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years					
Gender	**Year of Retirement**				
	2020	**2025**	**2030**	**2035**	**2040**
Male	21.0	21.4	21.8	22.2	22.6
Female	24.0	24.4	24.8	25.2	25.6

Post-retirement mortality (disabled): PUB-2010 Disabled Mortality table, with a 4-year set-forward for both male and female rates, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010.

Marital status:

100% of employees are assumed to be married, with the female spouse 3 years younger than the male spouse.

Line of Duty Disability

Non-Hazardous: 2% of disabilities are assumed to occur in the line of duty

Hazardous: 10% of disabilities are assumed to occur in the line of duty

Line of Duty Death

25% of deaths are assumed to occur in the line of duty

Dependent Children:

For members in the Hazardous Plan who receive a duty-related death or disability benefit, the member is assumed to be survived by two dependent children, each age 6 with payments for 15 years.

Form of Payment:

Members are assumed to elect a life-only annuity at retirement.

Actuarial Cost Method:

Entry Age Normal, Level Percentage of Pay. The Entry Age Normal actuarial cost method allocates the System's actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level percent of pay necessary to fully fund the expected benefits to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

Health Care Age Related Morbidity/Claims Utilization:

To model the impact of aging on the underlying health care costs for Medicare retirees, the valuation relied on the Society of Actuaries' 2013 Study "Health Care Costs – From Birth to Death". Table 4 (Development of Plan Specific Medicare Age Curve) was used to model the impact of aging for ages 65 and over.

Health Care Cost Trend Rates[1]:

Year	Non-Medicare Plans	Medicare Plans	Dollar Contribution[2]
2021	6.25%	5.50%	1.50%
2022	6.25%	5.40%	1.50%
2023	6.25%	5.30%	1.50%
2024	6.00%	5.20%	1.50%
2025	5.80%	5.10%	1.50%
2026	5.60%	5.00%	1.50%
2027	5.40%	4.90%	1.50%
2028	5.20%	4.80%	1.50%
2029	5.00%	4.70%	1.50%
2030	4.80%	4.60%	1.50%
2031	4.60%	4.50%	1.50%
2032	4.40%	4.40%	1.50%
2033	4.20%	4.30%	1.50%
2034	4.05%	4.20%	1.50%
2035 & Beyond	4.05%	4.05%	1.50%

[1] All increases are assumed to occur on January 1. The 2020 premiums were known at the time of the valuation and were incorporated into the liability measurement

[2] Applies to members participating on or after July 1, 2003

Health care trend assumptions are based on the model issued by the Society of Actuaries "Getzen model of Long-Run Medical Cost Trends for the SOA; Thomas E. Getzen, iHEA and Temple University 2014 © Society of Actuaries.

The underlying assumptions used to develop the health care trend rates include:

- A short run period-this is a period for which anticipated health care trend rates are manually set based on local information as well as plan-specific and carrier information.
- Long term real GDP growth – 1.75%
- Long term rate of inflation – 2.30%
- Long term nominal GDP growth – 4.05%
- Year that excess rate converges to 0 – 2035

Health care trend rates are thus the manually set rates for the short run period and rates which decline to an ultimate trend rate which equals the assumed nominal long term GDP growth rate.

Health Care Participation Assumptions:

- Active members are assumed to elect health coverage at retirement at the following participation rates.

Service at Retirement	Members participating before 7/1/2003*	Members participating after 7/1/2003
Under 10	50%	100%
10-14	75%	100%
15-19	90%	100%
Over 20	100%	100%

* 100% of members with a duty disability or a duty death (in service) benefit are assumed to elect coverage at retirement.

- Future retirees are assumed to have a similar distribution by plan type as the current retirees.

Medicare Plan	Participation Percentage
Medical Only	7%
Essential	8%
Premium	85%

Non-Medicare Plan	Participation Percentage
LivingWell Limited	2%
LivingWell Basic	13%
LivingWell CDHP	27%
LivingWell PPO	58%

Health Care Participation Assumptions (continued):

- 50% of deferred vested members participating before July 1, 2003 are assumed to elect health coverage at retirement. 100% of deferred vested members participating after July 1, 2003 are assumed to elect health coverage at retirement.

- Deferred vested members receiving insurance benefits from the non-hazardous fund are assumed to begin health coverage at age 55 for members participating before September 1, 2008, at age 60 for members participating on or after September 1, 2008 but before January 1, 2014, and at age 65 for members participating on or after January 1, 2014.

- Deferred vested members receiving insurance benefits from the hazardous fund are assumed to begin health coverage at age 50 for members participating before January 1, 2014 and at age 60 for members participating on or after January 1, 2014.

- 50% of future retirees, with hazardous service, are assumed to elect spouse health care coverage. No dependent coverage is assumed for members who only have non-hazardous service. 100% of spouses with health care coverage are assumed to continue coverage after the member’s death.

Excise (“Cadillac”) Tax:

For taxable years beginning after December 31, 2021, a 40% excise tax will be required to be paid (by the employer and/or insurer) on the aggregate cost of the health plan in excess of certain legislated thresholds. For 2018, the thresholds are $850 per month for individual coverage and $2,292 per month for family coverage.

Both Actuarial Standard of Practice No. 6 and GASB Statement Nos. 74 and 75 reference this tax, and, in accordance with these standards an estimate of the impact of the Cadillac tax has been included in this valuation.

Assumptions and methods used to determine the impact of the Cadillac Tax include:

- 2018 thresholds of $850/$2,292 were indexed annually by 2.30%.
- Premium data submitted was not adjusted for permissible exclusions to the Cadillac Tax.
- There were no special adjustments to the dollar limit other than those permissible for non-Medicare retirees over 55.

In this valuation, the impact of the Cadillac Tax has been calculated by increasing the employer paid premiums for Non-Medicare retirees, who became participants before July 1, 2003, by 0.9%. Non-Medicare retirees who became participants after July 1, 2003 receive dollar subsidies per year of service, which are not expected to exceed the overall Non-Medicare premiums. As a result, the costs attributable to the Cadillac Tax for members who became participants after July 1, 2003 will be paid by the retirees.

Other Assumptions

1. Valuation payroll (used for determining the amortization contribution rate): Current fiscal year payroll.

2. Individual salaries used to project benefits: For salary amounts prior to the valuation date, the salary from the last fiscal year is projected backward with the valuation salary scale assumption. For future salaries, the salary from the last fiscal year is projected forward with one year's salary scale.

3. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported salaries represent amounts paid to members during the year ending on the valuation date.

4. Current active members that terminated employment (for reasons other than retirement, disability, or death) are assumed to commence their retirement benefits at first unreduced retirement eligibility. Members are assumed to elect a refund of member contributions if the value of their account balance exceeds the present value of the deferred benefit. Members participating in the Cash Balance plan are assumed to elect to receive a lump sum of their cash balance account if their account balance exceeds the present value of the deferred benefit and the member is not eligible for insurance benefits at termination.

5. The beneficiaries of current active members that die while active are assumed to commence their survivor benefits at the member's first unreduced retirement eligibility. Beneficiaries are assumed to elect a refund of member contributions if the value of the member's account balance exceeds the present value of the survivor benefit. Beneficiaries of active members that die while in the line of duty are assumed to commence their survivor benefits immediately at the death of the member.

6. There will be no recoveries once disabled.

7. Cash Balance Provisions: The cash balance interest crediting rate while a member is an active employee is assumed to equal 4.9375% (based upon the 5.25% assumed investment return) for the Non-Hazardous Fund and 5.6875% (based upon the 6.25% assumed investment return) for the Hazardous Fund. The interest crediting rate after a member terminates employment is 4% for all plans.

8. Decrement timing: Decrements of all types are assumed to occur mid-year. Decrement rates are used as described in this report, without adjustment for multiple decrement table effects.

9. Service: All members are assumed to accrue 1 year of benefit and eligibility service each year.

10. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

11. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

12. Current Inactive Population (Retirement Funds): All non-vested members are assumed to take an immediate refund of member contributions. Vested members are assumed to elect an immediate refund of member contributions at the valuation date if the value of their account balance exceeds the present value of their deferred benefit. Non-hazardous members are assumed to retire at age 65. Hazardous members hired prior to September 1, 2008 are assumed to retire at age 55 and hazardous members hired on or after September 1, 2008 are assumed to retire at age 60.

Participant Data

Participant data was supplied in electronic text files. There were separate files for (i) active and inactive members, and (ii) members and beneficiaries receiving benefits.

The data for active and terminated members included date of birth, gender, date of participation, benefit tier indicator, service with the current system, total vesting service, salary, employee contribution account balances, and employer pay credits for members participating in the cash balance plan. For retired members and beneficiaries, the data included date of birth, gender, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and form of payment code.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

Changes in assumptions since the prior valuation:

- Annual salary increases were updated based on the 2018 Experience Study
- Annual rates of retirement, disability, withdrawal, and mortality were updated based on the 2018 Experience Study
- The percent of disabilities assumed to occur in the line of duty was updated from 0% to 2% for non-hazardous members and 10% for hazardous members
- The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.
- The assumed impact of the Cadillac Tax was changed from a 3.6% to a 0.9% load on employer paid premiums for Non-Medicare retirees who became participants prior to July 1, 2003.

Development of Baseline Claims Cost

For non-Medicare retirees, the initial per capita costs were based on the plan premiums effective January 1, 2020, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. The spouse/dependent premium of $870.41 for non-Medicare retirees is based on a blending of Family and Couple premiums for the current retirees that have over 4 years of hazardous service. The fully-insured premiums KRS pays the Kentucky Employees' Health Plan (KEHP) are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit rate subsidy for the non-Medicare eligible retirees. Actuarial Standard of Practice No. 6 (ASOP No. 6) requires aging subsidies (or implicit rate subsidies) to be recognized. However, the KRS health insurance trusts are only used to reimburse KEHP for the employer's portion of the blended premiums. Said another way, the trusts are not used to fund the difference between the underlying retiree claims and the blended KEHP premiums. As a result, the retiree health care liabilities developed in this report for the non-Medicare retirees are based solely on the premiums charged by KEHP, without any age-adjustment. GASB Statements No. 74 and No. 75 prohibit such a deviation from ASOP No. 6. The liabilities developed in this report are solely for the purpose of funding the benefits paid by the health insurance funds and are not appropriate for financial statement disclosures required by GASB. GRS provides separate GASB reports to KRS which include the liabilities associated with the implicit rate subsidy.

FOR THOSE NOT ELIGIBLE FOR MEDICARE		
AGE	MEMBER	SPOUSE/DEPENDENTS
<65	$728.75	$870.41

For Medicare retirees, the initial per capita costs were estimated based on the plan premiums effective January 1, 2020, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. Age graded and sex distinct premiums are utilized for retirees over the age of 65. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

FOR THOSE ELIGIBLE FOR MEDICARE		
AGE	MALE	FEMALE
65	$207.21	$195.44
75	242.43	236.56
85	256.36	259.38

Appendix B of the report provides a full schedule of premiums.

Mehdi Riazi is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Mehdi Riazi

Mehdi Riazi, FSA, EA, MAAA

APPENDIX B

BENEFIT PROVISIONS

Summary of Benefit Provisions for Kentucky Employees Retirement System (KERS)

KERS Non-Hazardous Employees

Retirement: Tier 1, Participation before 9/1/2008

Normal Retirement Eligibility	Age 65 with at least 1 month of service credit; or Any age with at least 27 years of service
Benefit Amount	If a member has at least 48 months of service, the monthly benefit is 2.00% times final average compensation times years of service. For members who did not have 13 months of service credit for 1/1/1998-1/1/1999, the monthly benefit is 1.97% times final average compensation times years of service. 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. Final average compensation is based on the member's highest 5 years of compensation.
Early Retirement Eligibility	Any age (prior to age 65) with at least 25 years of service; or Age 55 with at least 5 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement eligibility precedes the member's normal retirement date.

KERS Non-Hazardous Employees (continued)

Retirement: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Normal Retirement Eligibility	Age 65 with at least 5 years of service; or Rule of 87 (Age 57 or older if age plus service equals 87)
Benefit Amount	The monthly benefit is equal to the applicable benefit multiplier times final average compensation times years of service.

Years of Service	Benefit Multiplier
10 or less	1.10%
10-20	1.30%
20-26	1.50%
26-30	1.75%
Greater than 30*	2.00%

* The 2.00% benefit multiplier only applies to service credit in excess of 30 years. If a member has greater than 30 years of service at retirement, service prior to 30 years will be multiplied by the 1.75% benefit multiplier.

Final compensation is based on the member's last 5 years of compensation.

Early Retirement Eligibility	Age 60 with at least 10 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement date precedes the member's normal retirement eligibility.

Retirement: Tier 3, Participation on or after 1/1/2014

Normal Retirement Eligibility	Age 65 with at least 5 years of service; or Rule of 87 (Age 57 or older if age plus service equals 87)
Benefit Amount	Each year that the member is active, a 4.00% employer pay credit and the employee's 5.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. 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 in that year 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. At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.
Early Retirement Eligibility	N/A

KERS Non-Hazardous Employees (continued)

Deferred Vested Benefit: Tier 1, Participation before 9/1/2008

Eligibility	At least 1 month of service credit
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Eligibility	5 years of service
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit Tier 3, Participation on or after 1/1/2014

Eligibility	5 years of service
Benefit Amount	At termination of employment, members may choose to leave their account balance with the System and retire once they are eligible. The hypothetical account balance will earn 4% annual interest after termination. Members may also choose to withdrawal their entire accumulated balance. If a member does not have 5 years of service at termination, the member is eligible to receive a partial refund of their account balance. This refund includes the member's contributions with interest.

Disability Retirement: Participation before 8/1/2004

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	Disability benefits are calculated in the same manner as the normal retirement benefit with years of service and final compensation being determined as of the date of disability, except that service credit shall be added to the person's total service beginning with the last date of paid employment and continuing to the member's 65th birthday, with total service not exceeding 25 years. Total service credit added shall not be greater than the member's actual service at disability. For members with at least 25 years of service on the last day of paid employment but less than 27 years of service, total service shall be 27 years. For members with 27 or more years of service credit, actual service will be used.

KERS Non-Hazardous Employees (continued)

Disability Retirement: Participation on or after 8/1/2004 but before 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 20% of the member's final monthly rate of pay or the member's normal retirement benefit (without reduction for early retirement) with years and final compensation being determined as of the date of disability.

Disability Retirement: Participation on or after 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 20% of the member's final monthly rate of pay or the member's retirement benefit calculated at the member's normal retirement date.

Line of Duty Disability Benefit

Disability Benefit	If the disability is a direct result of an act in the line of duty, the benefit shall not be less than 25% of the member's final monthly rate of pay. Additionally, each eligible dependent child will receive 10% of the member's monthly final rate of pay up to a maximum of 40%.

Pre-Retirement Death Benefit

Eligibility	Eligible for early or normal retirement; or Under age 65 with at least 60 months of service and actively working at the time of death; or At least 144 months of service, if no longer actively working
Spouse Benefit	The member's retirement benefit calculated in the same manner as if the member had retired on the day of the member's death and elected a 100% joint and survivor benefit. The benefit is actuarially reduced if the member dies prior to their normal retirement age.

Pre-Retirement Death Benefit (Death in the Line of Duty)

Eligibility	One month of service credit
Spouse Benefit	A $10,000 lump sum payment plus a monthly payment of 75% of the deceased member's final monthly average pay. Each dependent child will receive 10% of the final monthly average pay (not to exceed a total child benefit of 25% while the spouse is alive). A spouse may also elect the non-line of duty death benefit.
Child Benefit	In the event there is no surviving spouse, the benefit is 50% of final monthly average pay for one child, 65% of final monthly average pay for two children, or 75% of final monthly average pay for three or more eligible children.

KERS Non-Hazardous Employees (continued)

Post-Retirement Death Benefit

Eligibility	48 months of service, and in receipt of retirement benefits
Death Benefit	A $5,000 lump sum payment

Member Contributions

Tier 1, Participation before 9/1/2008	5% of creditable compensation. Members who do not receive a retirement benefit are entitled to a full refund of contributions with interest. The annual interest rate is set by the KRS board, not less than 2.0%.
Tier 2, Participation on or after 9/1/2008 but before 1/1/2014	5% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest. The annual interest rate is 2.5%.
Tier 3, Participation after 1/1/2014	5% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest.

Changes since the Prior Valuation

- House Bill 1 passed during the 2019 Special Legislative Session and allows certain employers in the Non-Hazardous plan to elect to cease participating in the System as of June 30, 2020 under different provisions than were previously in statute.

KERS Hazardous Employees

Retirement: Tier 1, Participation before 9/1/2008

Normal Retirement Eligibility	Age 55 with at least 1 month of service credit; or Any age with at least 20 years of service
Benefit Amount	If a member has at least 60 months of service, the monthly benefit is 2.49% times final average compensation times years of service. 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. Final average compensation is based on the member's highest 3 years of compensation.
Early Retirement Eligibility	Age 50 with at least 15 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement date precedes the member's normal retirement eligibility.

KERS Hazardous Employees (continued)

Retirement: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Normal Retirement Eligibility	Age 60 with at least 5 years of service; or Any age with at least 25 years of service
Benefit Amount	The monthly benefit is equal to the applicable benefit multiplier times final average compensation times years of service.

Years of Service	Benefit Multiplier
10 or less	1.30%
10-20	1.50%
20-25	2.25%
Greater than 25	2.50%

Final average compensation is based on the member's highest 3 years of compensation.

Early Retirement Eligibility	Age 50 with at least 15 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement date precedes the member's normal retirement eligibility.

Retirement: Tier 3, Participation on or after 1/1/2014

Normal Retirement Eligibility	Age 60 with at least 5 years of service; or Any age with at least 25 years of service
Benefit Amount	Each year that the member is active, a 7.50% employer pay credit and the employee's 8.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. 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 in that year 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. At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.
Early Retirement Eligibility	N/A

KERS Hazardous Employees (continued)

Deferred Vested Benefit: Tier 1, Participation before 9/1/2008

Eligibility	At least 1 month of service credit
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Eligibility	5 years of service
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit Tier 3, Participation on or after 1/1/2014

Eligibility	5 years of service
Benefit Amount	At termination of employment, members may choose to leave their account balance with the System and retire once they are eligible. The hypothetical account balance will earn 4% annual interest after termination. Members may also choose to withdrawal their entire accumulated balance. If a member does not have 5 years of service at termination, the member is eligible to receive a partial refund of their account balance. This refund includes the member's contributions with interest.

Disability Retirement: Participation before 8/1/2004

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	Disability benefits are calculated in the same manner as the normal retirement benefit with years of service and final compensation being determined as of the date of disability, except that if the member has less than 20 years of service at disability, service credit shall be added to the person's total service beginning with the last date of paid employment and continuing to the member's 55th birthday, with total service not exceeding 20 years. Total service credit added shall not be greater than the member's actual service at disability.

KERS Hazardous Employees (continued)

Disability Retirement: Participation on or after 8/1/2004 but before 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 25% of the member's final monthly rate of pay or the member's normal retirement benefit (without reduction for early retirement) with years and final compensation being determined as of the date of disability.

Disability Retirement: Participation on or after 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 25% of the member's final monthly rate of pay or the member's retirement benefit calculated at the member's normal retirement date.

Line of Duty Disability Benefit

Disability Benefit	If the disability is a direct result of an act in the line of duty, the benefit shall not be less than 25% of the member's final monthly rate of pay. Additionally, each eligible dependent child will receive 10% of the member's monthly final rate of pay up to a maximum of 40%.

Pre-Retirement Death Benefit

Eligibility	Eligible for early or normal retirement; or Under age 55 with at least 60 months of service and actively working at the time of death; or At least 144 months of service, if no longer actively working
Spouse Benefit	The member's retirement benefit calculated in the same manner as if the member had retired on the day of the member's death and elected a 100% joint and survivor benefit. The benefit is actuarially reduced if the member dies prior to their normal retirement age.

Pre-Retirement Death Benefit (Death in the Line of Duty)

Eligibility	One month of service credit
Spouse Benefit	A $10,000 lump sum payment plus a monthly payment of 75% of the deceased member's final monthly average pay. Each dependent child will receive 10% of the final monthly average pay (not to exceed a total child benefit of 25% while the spouse is alive). A spouse may also elect the non-line of duty death benefit.
Non-Spouse Benefit	If the beneficiary is only one person who is a dependent receiving at least 50% of his or her support from the member, the beneficiary may elect a lump-sum payment of $10,000.
Child Benefit	In the event there is no surviving spouse, the benefit is 50% of final monthly average pay for one child, 65% of final average pay for two children, or 75% of final average pay for three or more eligible children.

KERS Hazardous Employees (continued)

Post-Retirement Death Benefit

Eligibility	48 months of service, and in receipt of retirement benefits
Death Benefit	A $5,000 lump sum payment

Member Contributions

Tier 1, Participation before 9/1/2008	8% of creditable compensation. Members who do not receive a retirement benefit are entitled to a full refund of contributions with interest. The annual interest rate is set by the KRS board, not less than 2.0%.
Tier 2, Participation on or after 9/1/2008 but before 1/1/2014	8% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest. The annual interest rate is 2.5%.
Tier 3, Participation after 1/1/2014	8% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest.

Changes since the Prior Valuation

There have been no changes to benefit provisions since the prior valuation.

Summary of Main Retiree Insurance Benefit Provisions

Insurance Tier 1: Participation began before 7/1/2003

Benefit Eligibility Recipient of a retirement allowance

Benefit Amount

Non-Hazardous Service	Percentage of Member Premium Paid by Retirement System	Hazardous Service	Percentage of Member & Dependent Premium Paid by Retirement System
Less than 4 years	0%	Less than 4 years	0%
4 – 9 years	25%	4 – 9 years	25%
10 – 14 years	50%	10 – 14 years	50%
15 – 19 years	75%	15 – 19 years	75%
20 or more years	100%	20 or more years	100%

The percentage paid by the retirement system is applied to the 'contribution' plan selected by the KRS Board.

Duty Disability Retirement If disability was a result of injuries sustained while in the line of duty, the member receives 100% of the maximum contribution for the member and dependents. This benefit is provided to members in the Non-hazardous and Hazardous plans alike.

Duty Death in Service If an active employee's death was a result of injuries sustained while in the line of duty, the member's spouse and children receive a fully subsidized health insurance benefit. This benefit is provided to members in the Non-hazardous and Hazardous plans alike.

Non-Duty Death in Service If the surviving spouses is in receipt of a pension allowance, he or she is eligible for continued health coverage. The percentage of the premium paid for by the retirement system is based on the member's years of hazardous service at the time of death.

Surviving Spouse of a Retiree A surviving spouse of a retiree, who is in receipt of a pension allowance, will receive a premium subsidy based on the member's years of hazardous service.

Hazardous employees who retired prior to August 1, 1998 System's contribution for spouse and dependents is based on total service.

Insurance Tier 2: Participation began on or after 7/1/2003, but before 9/1/2008

Benefit Eligibility	Recipient of a retirement allowance with at least 120 months of service at retirement
Non-Hazardous Subsidy	Monthly contribution of $10 for each year of earned service. The monthly contribution is increased by 1.5% each July 1. As of July 1, 2019, the Non-Hazardous monthly contribution was $13.58/year of service. Upon the retiree's death, the surviving spouse may continue coverage (if in receipt of a retirement allowance) but will be 100% responsible for the premiums.
Hazardous Subsidy	Monthly contribution of $15 for each year of earned hazardous service. The monthly contribution is increased by 1.5% each July 1. As of July 1, 2019, the Hazardous monthly contribution was $20.37/year of service. Upon the retiree's death, the surviving spouse of a hazardous duty member will receive a monthly contribution of $10 ($13.58 as of July 1, 2019) for each year of hazardous service.
Duty Disability Retirement	If disability was a result of injuries sustained while in the line of duty, the member receives a benefit equal to at least 20 times the Non-Hazardous monthly contribution. This benefit is provided to members in the Non-Hazardous and Hazardous plans alike.
Duty Death in Service	If an active employee's death was a result of injuries sustained while in the line of duty, the member's spouse and children receive a fully subsidized health insurance benefit. This benefit is provided to members in the Non-Hazardous and Hazardous plans alike.
Non-Duty Death in Service	If the surviving spouse is in receipt of a pension allowance, he or she is eligible for continued health coverage. The percentage of the premium paid for by the retirement system is based on the member's years of hazardous service at the time of death.

Insurance Tier 3: Participation began on or after 9/1/2008

Tier 3 insurance benefits are identical to Tier 2, except Tier 3 members are required to have at least 180 months of service in order to be eligible.

Monthly Health Plan Premiums – Effective January 1, 2020

	Non-Medicare Plan Options				
Plan Option	Single	Parent Plus	Couple	Family	Family X-Ref
LivingWell PPO*	$731.82	$1,044.12	$1,604.96	$1,787.46	$881.40
LivingWell CDHP	710.94	982.30	1,342.78	1,500.50	821.36
LivingWell Basic	683.58	942.52	1,457.82	1,624.66	801.82
Living Well Limited	608.24	866.76	1,334.18	1,485.46	731.68

Medicare Plan Options	
Kentucky Retirement Systems - Medical Only Plan	$176.26
Kentucky Retirement Systems – Medicare Advantage/Essential Plan	63.15
Kentucky Retirement Systems – Medicare Advantage/Premium Plan*	250.75

*For 2020, the contribution plans selected by the KRS Board were the LivingWell PPO plan option for non-Medicare retirees and the Medicare Advantage Premium plan option for Medicare retirees.

Dollar Contribution Amount for Insurance Tier 2 and Tier 3

Monthly contribution amounts per year of service as of July 1, 2019.

Non-Hazardous Service	Hazardous Service
$13.58	$20.37

Changes since the Prior Valuation

There have been no changes to benefit provisions since the prior valuation.

APPENDIX C

GLOSSARY

Glossary

Actuarial Accrued Liability (AAL): That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

Actuarial Assumptions: Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

Actuarial Cost Method or ***Funding Method:*** A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ADC.

Actuarial Gain or ***Actuarial Loss:*** A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)

b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and

c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, non-retired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations that provide the financial information of the plan, such as the funded ratio, unfunded actuarial accrued liability and the ADC.

Actuarial Value of Assets or ***Valuation Assets:*** The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.

Actuarially Determined: Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Actuarially Determined Contribution (ADC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and the Amortization Payment.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

Amortization Payment: The portion of the pension plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Closed Amortization Period: A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: A retirement plan that is not a Defined Contribution Plan. Typically a defined benefit plan is one in which benefits are defined by a formula applied to the member's compensation and/or years of service.

Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Experience Study: A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.

Funding Period or ***Amortization Period:*** The term "Funding Period" is used two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ADC. This funding period is specified in State statute. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on a statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: Governmental Accounting Standards Board.

GASB 67 and ***GASB 68***: Governmental Accounting Standards Board Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting and reporting rules for public retirement systems and the employers that sponsor, participate in, or contribute to them. Statement No. 67 sets the accounting rules for the financial reporting of the retirement systems, while Statement No. 68 sets the rules for the employers that sponsor, participate in, or contribute to public retirement systems.

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded

Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but may not decrease by exactly one year in the subsequent year's actuarial valuation. For instance, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year.

Unfunded Actuarial Accrued Liability: The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Valuation Date or Actuarial Valuation Date: The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

County Employees Retirement System (CERS)

Actuarial Valuation Report
as of June 30, 2019

GRS Retirement Consulting
P: 469.524.0000 | F: 469.524.0003 | www.grsconsulting.com

November 6, 2019

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

Subject: Actuarial Valuation as of June 30, 2019

Dear Trustees of the Board:

This report describes the current actuarial condition of the County Employees Retirement System (CERS), provides the actuarially determined employer contribution rates for fiscal year ending June 30, 2021, and analyzes changes in the System's financial condition. In addition, the report provides various summaries of the data.

Separate reports are issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statements 67, 68, 74 and 75. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of June 30, the first day of the plan year for KRS. This report was prepared at the request of the Board of Trustees of the Kentucky Retirement Systems (Board) and is intended for use by the KRS staff and those designated or approved by the Board.

FINANCING OBJECTIVES AND FUNDING POLICY

The employer contribution rate is determined in accordance with Section 61.565 of Kentucky Statute. As specified by the Statute, the employer contribution rate is determined based on a closed thirty-year amortization period beginning July 1, 2013. As a result, the amortization period used in the 2019 actuarial valuation is 24 years. The contribution rate determined by this actuarial valuation becomes effective twelve months after the valuation date. In other words, the contribution rate determined by this June 30, 2019 actuarial valuation will be used by the Board to certify the participating employers' contribution rates for the fiscal year beginning July 1, 2020 and ending June 30, 2021.

If new legislation is enacted between the valuation date and the date the contribution rate becomes effective, the Board may adjust the calculated rate before certifying them, in order to reflect this new legislation. Such adjustments are based on information supplied by the actuary.

ASSUMPTIONS AND METHODS

The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation. An experience study was conducted after the June 30, 2018 actuarial valuation and the Board adopted updated assumptions for use in this actuarial valuation. The principle updated assumptions include:

- Change in the rates of salary increases for individuals.
- New post-retirement mortality assumption based on KRS retiree experience and the inclusion of an explicit assumption for future improvement in mortality.
- Updated mortality assumptions for members during employment and for disabled retirees.
- Change in the rates of retirements.
- Change in the rates that an active member is assumed to become an inactive member in the System prior to retirement.
- Updated rates of disability incidence.

The experience study included a review of several economic assumptions which encompassed the rate of inflation, the investment return assumption, and the payroll growth assumption. However, those assumptions remain unchanged from the prior actuarial valuation.

The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) since the June 30, 2018 valuation to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rate, and funding periods. The actuarial calculations are intended to provide information for rational decision making.

BENEFIT PROVISIONS

The benefit provisions reflected in these valuations are those which were in effect on June 30, 2019. There were no benefit changes since the prior valuation.

DATA

Member data for retired, active and inactive members was supplied as of June 30, 2019, by the KRS staff. The staff also supplied asset information as of June 30, 2019. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. GRS is not responsible for the accuracy or completeness of the information provided to us by KRS.

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of CERS as of June 30, 2019.

All of our work conforms with generally accepted actuarial principles and practices, and is in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Kentucky Code of Laws and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries and consultants. Mr. Newton and Mr. White are Enrolled Actuaries. All three of the undersigned are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries. All of the undersigned are experienced in performing valuations for large public retirement systems.

Sincerely,

Gabriel, Roeder, Smith & Co.

Daniel J White

Joseph P. Newton, FSA, MAAA, EA
Pension Market Leader and Actuary

Daniel J. White, FSA, MAAA, EA
Senior Consultant

Janie Shaw

Janie Shaw, ASA, MAAA
Consultant

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SECTION 1

EXECUTIVE SUMMARY

Summary of Principal Results

(Dollar amounts expressed in thousands)

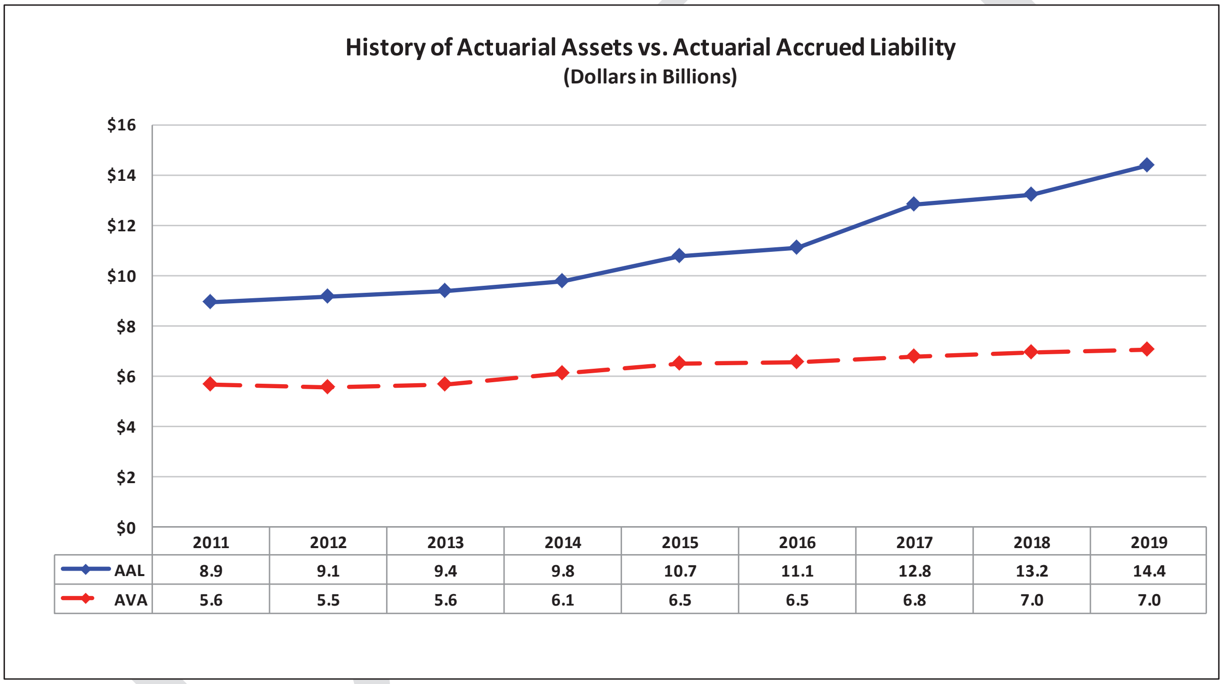
	Non-Hazardous		**Hazardous**		**Total**	
	June 30, 2019	June 30, 2018	June 30, 2019	June 30, 2018	June 30, 2019	June 30, 2018
Actuarially Determined Contribution:						
Retirement	26.21%	22.52%	46.31%	36.98%		
Insurance	5.78%	4.76%	10.47%	9.52%		
Total	31.99%	27.28%	56.78%	46.50%	N/A	N/A
Contribution Rate for Next Fiscal Year[1]	26.95%	24.06%	44.33%	39.58%		
Assets:						
Retirement						
• Actuarial value (AVAR)	$7,049,527	$6,950,225	$2,375,106	$2,321,721	$9,424,633	$9,271,946
• Market value (MVAR)	$7,159,921	$7,018,963	$2,413,708	$2,348,337	$9,573,629	$9,367,300
• Ratio of actuarial to market value of assets	98.5%	99.0%	98.4%	98.9%	98.4%	99.0%
Insurance						
• Actuarial value (AVAI)	$2,523,249	$2,371,430	$1,313,659	$1,256,306	$3,836,908	$3,627,736
• Market value (MVAI)	$2,569,511	$2,414,126	$1,340,714	$1,280,982	$3,910,225	$3,695,108
• Ratio of actuarial to market value of assets	98.2%	98.2%	98.0%	98.1%	98.1%	98.2%
Funded Status:						
Retirement						
• Actuarial accrued liability	$14,356,113	$13,191,505	$5,245,365	$4,792,548	$19,601,478	$17,984,053
• Unfunded accrued liability on AVAR	$7,306,586	$6,241,280	$2,870,259	$2,470,827	$10,176,845	$8,712,107
• Funded ratio on AVAR	49.1%	52.7%	45.3%	48.4%	48.1%	51.6%
• Unfunded accrued liability on MVAR	$7,196,192	$6,172,542	$2,831,657	$2,444,211	$10,027,849	$8,616,753
• Funded ratio on MVAR	49.9%	53.2%	46.0%	49.0%	48.8%	52.1%
Insurance						
• Actuarial accrued liability	$3,567,947	$3,092,624	$1,732,879	$1,684,028	$5,300,826	$4,776,652
• Unfunded accrued liability on AVAI	$1,044,698	$721,194	$419,220	$427,722	$1,463,918	$1,148,916
• Funded ratio on AVAI	70.7%	76.7%	75.8%	74.6%	72.4%	75.9%
• Unfunded accrued liability on MVAI	$998,436	$678,498	$392,165	$403,046	$1,390,601	$1,081,544
• Funded ratio on MVAI	72.0%	78.1%	77.4%	76.1%	73.8%	77.4%
Membership:						
• Number of						
- Active Members	81,506	81,818	9,474	9,263	90,980	91,081
- Retirees and Beneficiaries	64,539	61,938	10,023	9,587	74,562	71,525
- Inactive Members	91,543	87,160	3,422	3,067	94,965	90,227
- Total	237,588	230,916	22,919	21,917	260,507	252,833
• Projected payroll of active members	$2,521,860	$2,466,801	$559,353	$533,618	$3,081,213	$3,000,419
• Average salary of active members	$30,941	$30,150	$59,041	$57,607	$33,867	$32,942

[1] Contribution rates limited to a 12% increase in the certified contribution rates from the prior fiscal year in accordance with House Bill 362 (2018 legislative session).

Executive Summary (Continued)

Non-Hazardous Retirement Fund

The unfunded actuarial accrued liability of the non-hazardous retirement system increased by $1,065 million since the prior year's valuation to $7.3 billion. The largest source of this increase is due to a $729 million increase in the liability due to the updated assumptions. Below is a chart with the historical actuarial value of assets and actuarial accrued liability. The divergence in the assets and liability over the last nine years has generally been due to a combination of: (1) contributions that were insufficient to amortize the unfunded actuarial accrued liability, (2) a decrease in the assumed rate of return in 2015 and again in 2017, and (3) the actual investment experience being less than the fund's expected investment return assumption.



History of Actuarial Assets vs. Actuarial Accrued Liability
(Dollars in Billions)

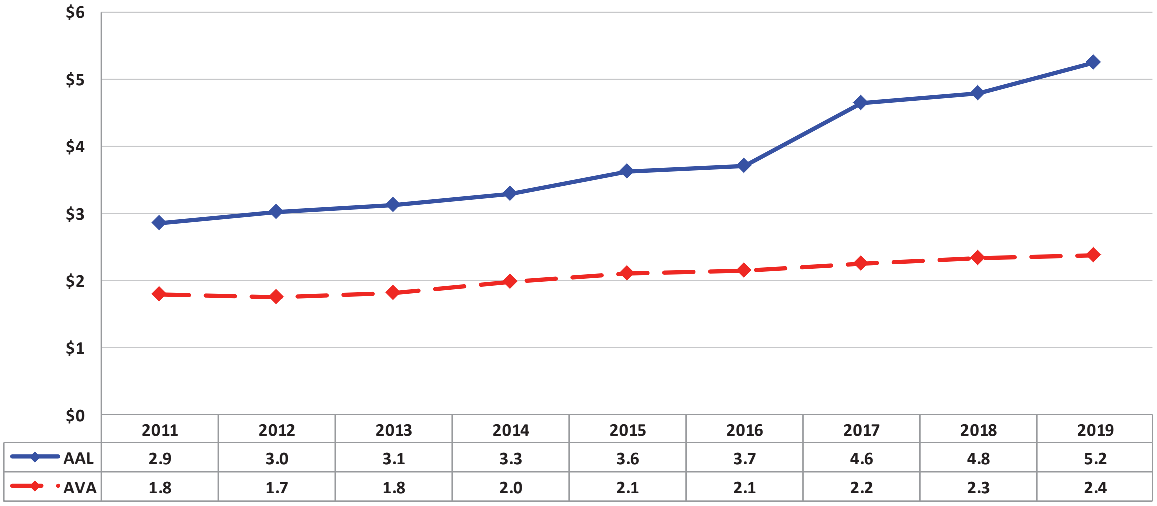
	2011	2012	2013	2014	2015	2016	2017	2018	2019
AAL	8.9	9.1	9.4	9.8	10.7	11.1	12.8	13.2	14.4
AVA	5.6	5.5	5.6	6.1	6.5	6.5	6.8	7.0	7.0

Executive Summary (Continued)

Hazardous Retirement Fund

The unfunded actuarial accrued liability of the hazardous retirement system increased by $399 million since the prior year's valuation to $2.9 billion. The largest source of this increase is due to a $273 million increase in the liability due to the updated assumptions. Below is a chart with the historical actuarial value of assets and actuarial accrued liability. The divergence in the assets and liability over the last nine years has generally been due to a combination of (1) contributions that were insufficient to amortize the unfunded actuarial accrued liability, (2) a decrease in the assumed rate of return in 2015 and again in 2017, and (3) the actual investment experience being less than the fund's expected investment return assumption.

History of Actuarial Assets vs. Actuarial Accrued Liability
(Dollars in Billions)



	2011	2012	2013	2014	2015	2016	2017	2018	2019
AAL	2.9	3.0	3.1	3.3	3.6	3.7	4.6	4.8	5.2
AVA	1.8	1.7	1.8	2.0	2.1	2.1	2.2	2.3	2.4

Executive Summary (Continued)

Summary of Change in Financial Condition of the Insurance Funds

The non-Medicare premiums were lower than expected and the Medicare premiums were higher than expected from calendar year 2019 to 2020. Specifically, the non-Medicare premiums were expected to increase by 7.00% from calendar year 2019 to calendar year 2020 (i.e. the medical trend assumption for non-Medicare premiums used in the actuarial valuation) and the actual average premiums were relatively level. Also, the Medicare premiums were expected to increase by 5.00% from calendar year 2019 to calendar year 2020 (i.e. the medical trend assumption used in the actuarial valuation for Medicare premium) and the actual average premiums increased by 13%. The favorable non-Medicare premium experience offset most of the actuarial loss that resulted from the new Medicare premiums. In fact, the overall premium experience resulted in a small actuarial gain for the hazardous plan which has younger retirees.

Non-Hazardous Insurance Fund

Since the prior year's valuation, the unfunded actuarial accrued liability of the non-hazardous insurance fund increased by $324 million since the prior year's valuation to $1,045 million. The largest source of this increase is due to a $174 million increase in the liability due to the updated actuarial assumptions adopted by the Board as a result of the experience study. The corresponding funded ratio decreased from 76.7% at June 30, 2018 to 70.7% at June 30, 2019.

Hazardous Insurance Fund

Since the prior year's valuation, the unfunded actuarial accrued liability of the hazardous insurance fund decreased by $9 million since the prior year's valuation to $419 million. The largest source of this decrease is due to a $45 million increase in the liability due to the updated actuarial assumptions adopted by the Board as a result of the experience study, which was offset by a $50 million decrease due to the premium experience described above plus other favorable demographic experience. The corresponding funded ratio increased from 74.6% at June 30, 2018 to 75.8% at June 30, 2019.

SECTION 2

DISCUSSION

Discussion

The County Employees Retirement System (CERS) is a cost-sharing, multiple-employer defined benefit pension fund that provides pensions and health care coverage for regular full-time members employed by positions of each participating county, city, and school board, and any additional eligible local agencies electing to participate in CERS. CERS includes both non-hazardous and hazardous duty benefits. This report presents the result of the June 30, 2019 actuarial funding valuation for both the Retirement Funds and Insurance Funds.

The primary purposes of the valuation report are to depict the current financial condition of the Funds and analyze changes in the Fund's financial condition. In addition, the report provides various summaries of the data.

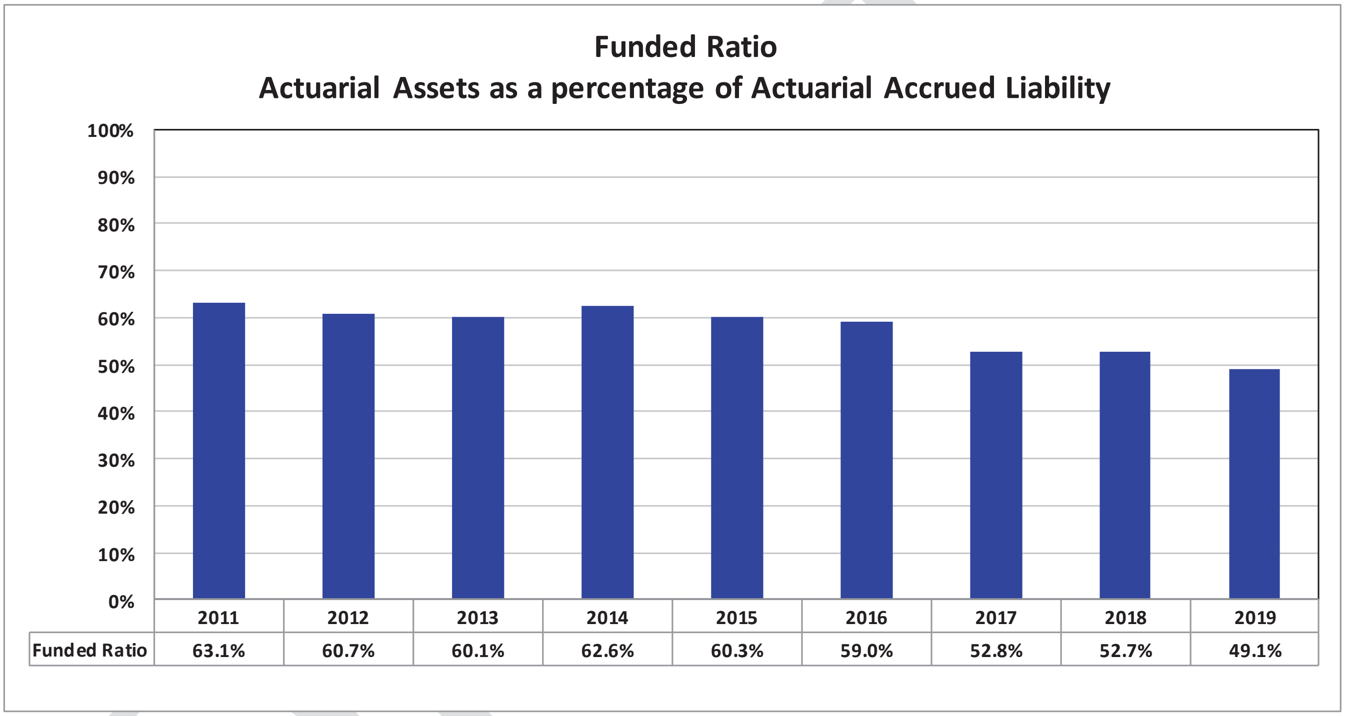
The actuarially determined contribution rates consist of two components: a normal cost rate and an amortization cost to finance the unfunded actuarial accrued liability. The normal cost rate is the theoretical amount which would be required to pay the members' benefits, based on the current plan provisions, if this amount had been contributed from each member's entry date and if the fund's experience exactly followed the actuarial assumptions. This is the amount that it should cost to provide the benefits for an average member. Since members contribute to the fund, only the excess of the normal rate over the member contribution rate is included in the employer contribution rate. The amortization cost is the amount, expressed as a percentage of payroll, necessary to amortize the unfunded actuarial accrued liability. The payroll growth rate and discount rate assumptions are selected by the Board. The funding period is specified in Section 61.565 of Kentucky Statute.

All of the actuarial and financial tables referenced by the other sections of this Report appear in Section 3. Section 4 provides member data and statistical information. Section 5 provides a discussion of various risk measures, which are intended to aid stakeholders in understanding the effects of future experience differing from the assumptions used in performing an actuarial valuation. This section was added to the report this year in compliance with the newly adopted Actuarial Standards of Practice. Appendices A and B provide summaries of the principle actuarial assumptions and methods and plan provisions. Finally, Appendix C provides a glossary of technical terms that are used throughout this report.

Funding Progress

The following charts provide a nine-year history of the retirement funds' funded ratio (i.e. the Actuarial Value of Assets divided by the Actuarial Accrued Liability). The decline in the funded ratio over the last nine years has generally been due to (1) actual contributions being insufficient to finance the unfunded actuarial accrued liability, (2) a decrease in the assumed rate of return in 2015 and again in 2017, and (3) actual investment experience being less than the investment return assumption.

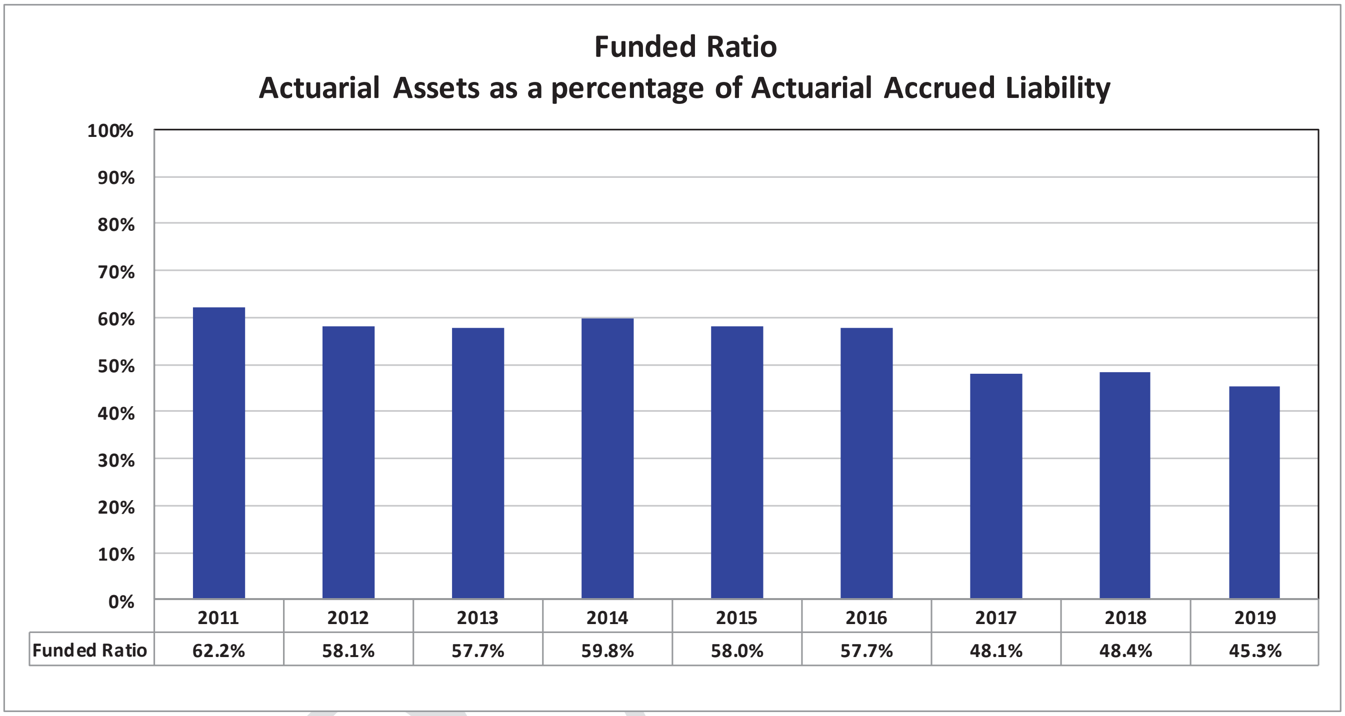
Non-Hazardous Retirement Fund



	2011	2012	2013	2014	2015	2016	2017	2018	2019
Funded Ratio	63.1%	60.7%	60.1%	62.6%	60.3%	59.0%	52.8%	52.7%	49.1%

Funding Progress (Continued)

Hazardous Retirement Fund



	2011	2012	2013	2014	2015	2016	2017	2018	2019
Funded Ratio	62.2%	58.1%	57.7%	59.8%	58.0%	57.7%	48.1%	48.4%	45.3%

Assuming the actuarial determined contributions are actually paid in future years and absent future unfavorable experience we expect the funded ratio to begin improving once the full actuarially determined contribution rates have been completely phased-in. Also, once the phase-in is complete, the dollar amount of the unfunded actuarial accrued liability, or the difference between the actuarial accrued liability and the actuarial value of assets, is expected to begin decreasing. Table 9, Schedule of Funding Progress, in the following section of the report provides additional detail regarding the funding progress of the Retirement Funds.

Asset Gains/ (Losses)

The actuarial value of assets ("AVA") is based on a smoothed market value of assets, using a systematic approach to phase-in the difference between the actual and expected investment return on the market value of assets (adjusted for receipts and disbursements during the year). This is appropriate because it dampens the short-term volatility inherent in investment markets. The returns are computed net of investment expenses. The actuarial value of assets for the non-hazardous retirement fund increased from $6.950 billion to $7.050 billion since the prior valuation. Table 7 in the following section of the report provides the development of the actuarial value of assets.

The rate of return on the market value of assets for the non-hazardous retirement fund on a dollar-weighted basis for fiscal year 2019 was a 5.7% which is less than the 6.25% expected annual return. The return on an actuarial (smoothed) asset value was 5.1%, which resulted in a $78 million loss for the fiscal year. This difference in the estimated return on market value and actuarial value illustrates the smoothing effect of the asset valuation method.

The market value of assets is $110 million greater than the actuarial value of assets, which signifies that the retirement fund is in a position of deferred gains to be realized in future years.

Likewise, the actuarial value of assets for the hazardous retirement fund increased from $2.322 billion to $2.375 billion since the prior valuation. The rate of return on the market value of assets on a dollar-weighted basis for fiscal year 2019 was a 5.7% which is less than the 6.25% expected annual return. The return on an actuarial (smoothed) asset value was 5.3%, which resulted in a $23 million loss for the fiscal year. The market value of assets is $39 million greater than the actuarial value of assets, which signifies that the retirement fund is in a position of deferred gains to be realized in future years.

Table 6 in the following section of this report provides asset information that was included in the annual financial statements of the System. Also, Tables 6 and 7 shows the estimated yield on a market value basis and on the actuarial asset valuation method.

Actuarial Gains/ (Losses)

The annual actuarial valuation is a snapshot analysis of the benefit liabilities, assets and funded position of the Systems as of the first day of the plan year. In any one fiscal year, the experience can be better or worse from that which is assumed or expected. The actuarial assumptions do not necessarily attempt to model what the experience will be for any one given fiscal year, but instead try to model the overall experience over many years. Therefore, as long as the actual experience of a retirement system is reasonably close to the current assumptions, the long-term funding requirements of the system will remain relatively consistent.

Below are tables that separately show a reconciliation of the actuarial gains / (losses) since the prior actuarial valuation for the retirement and health insurance funds, which include the effect of asset and liability gains and losses, changes in assumptions, changes in plan provisions, etc.

Retirement Experience Gain or (Loss)
(Dollar amounts expressed in thousands)

	Non-Hazardous	Hazardous
A. Calculation of total actuarial gain or loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	$ 6,241,280	$ 2,470,827
2. Normal cost and administrative expenses	266,415	76,574
3. Less: contributions for the year	(552,561)	(196,727)
4. Interest accrual	381,138	150,672
5. Expected UAAL (Sum of Items 1 - 4)	$ 6,336,272	$ 2,501,346
6. Actual UAAL as of June 30,2019	$ 7,306,586	$ 2,870,259
7. Total gain (loss) for the year (Item 5 - Item 6)	$ (970,314)	$ (368,913)
B. Source of gains and losses		
8. Asset gain (loss) for the year	$ (77,578)	$ (22,771)
9. Liability experience gain (loss) for the year	(163,429)	(72,909)
10. Plan Change	—	—
11. Assumption change	(729,307)	(273,233)
12. Total	$ (970,314)	$ (368,913)

Of the $970 million and $369 million in actuarial losses experienced by the non-hazardous and hazardous retirement funds, respectively, $729 million and $273 million were due to the increases in liability resulting from the assumption changes reflected as a result of the experience study as of June 30, 2018.

Actuarial Gains/ (Losses) (Continued)

Insurance Experience Gain or (Loss)
(Dollar amounts expressed in thousands)

	Non-Hazardous	Hazardous
A. Calculation of total actuarial gain or loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	$ 721,194	$ 427,722
2. Normal cost and administrative expenses	81,842	25,619
3. Less: contributions for the year	(151,466)	(64,735)
4. Interest accrual	42,899	25,510
5. Expected UAAL (Sum of Items 1 - 4)	$ 694,469	$ 414,116
6. Actual UAAL as of June 30,2019	$ 1,044,698	$ 419,220
7. Total gain (loss) for the year (Item 5 - Item 6)	$ (350,229)	$ (5,104)
B. Source of gains and losses		
8. Asset gain (loss) for the year	$ (14,747)	$ (7,157)
9. Liability experience gain (loss) for the year	(86,733)	49,543
10. Plan Change	—	—
11. Assumption change	(248,749)	(47,490)
12. Total	$ (350,229)	$ (5,104)

Of the $350 million and $5.1 million in actuarial losses experienced by the non-hazardous and hazardous insurance funds, respectively, $249 million and $47 million were due to the increases in liability resulting from the assumption changes reflected as a result of the experience study as of June 30, 2018 and the updated trend assumption. Additionally, the non-hazardous insurance fund's liability increased by $87 million due to the premium experience ($79 million) and other demographic experience ($8 million). The hazardous insurance fund's liability decreased by $50 million due to the premium experience ($27 million) and other demographic experience ($23 million).

Actuarial Assumptions and Methods

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an annual investment return assumption. The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation. An experience study was conducted after the June 30, 2018 actuarial valuation and the Board adopted updated assumptions for use in this actuarial valuation. The principle updated assumptions include:

- Change in the rates of salary increases for individuals.
- New post-retirement mortality assumption based on KRS retiree experience and the inclusion of an explicit assumption for future improvement in mortality.
- Updated mortality assumptions for members during employment and for disabled retirees.
- Change in the rates of retirements.
- Change in the rates that an active member is assumed to become an inactive member in the System prior to retirement.
- Updated rates of disability incidence.

The experience study included a review of several economic assumptions which included the rate of inflation, the investment return assumption, and the payroll growth assumption. However, those assumptions remain unchanged from the prior actuarial valuation.

The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) since the June 30, 2018 valuation to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.

It is our opinion that the assumptions are internally consistent, reasonable, and reflect anticipated future experience of the System. Appendix A includes a summary of the actuarial assumptions and methods used in this valuation.

Future actuarial measurements may differ significantly from the current measurements 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. This report does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

Benefit Provisions

Appendix B of this report includes a summary of the benefit provisions for CERS. There were not any changes in benefits since the prior valuation.

SECTION 3

ACTUARIAL TABLES

Actuarial Tables

Table Number	Page	Content of Table
Retirement Benefits		
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2	19	Actuarial Present Value of Future Benefits
3	20	Development of Required Contribution Rate
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6	23	Reconciliation of System Net Assets
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RETIREMENT BENEFITS

ACTUARIAL TABLES

Development of Unfunded Actuarial Accrued Liability
Retirement Benefits

(Dollar amounts expressed in thousands)

		June 30, 2019	
		Non-Hazardous (1)	Hazardous (2)
1.	Projected payroll of active members	$ 2,521,860	$ 559,353
2.	Present value of future pay	$ 19,454,837	$ 4,712,053
3.	Normal cost rate		
	a. Total normal cost rate	10.77%	19.05%
	b. Less: member contribution rate	-5.00%	-8.00%
	c. Employer normal cost rate	5.77%	11.05%
4.	Actuarial accrued liability for active members		
	a. Present value of future benefits	$ 7,429,476	$ 2,685,330
	b. Less: present value of future normal costs	(1,978,907)	(839,919)
	c. Actuarial accrued liability	$ 5,450,569	$ 1,845,411
5.	Total actuarial accrued liability		
	a. Retirees and beneficiaries	$ 8,350,811	$ 3,334,535
	b. Inactive members	554,733	65,419
	c. Active members (Item 4c)	5,450,569	1,845,411
	d. Total	$ 14,356,113	$ 5,245,365
6.	Actuarial value of assets	$ 7,049,527	$ 2,375,106
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	$ 7,306,586	$ 2,870,259
8.	Funded Ratio	49.1%	45.3%

Actuarial Present Value of Future Benefits
Retirement Benefits
(Dollar amounts expressed in thousands)

		June 30, 2019	
		Non-Hazardous (1)	Hazardous (2)
1.	Active members		
	a. Service retirement	$ 6,573,827	$ 2,455,820
	b. Deferred termination benefits and refunds	419,710	96,762
	c. Survivor benefits	127,137	21,715
	d. Disability benefits	308,802	111,033
	e. Total	$ 7,429,476	$ 2,685,330
2.	Retired members		
	a. Service retirement	$ 7,369,020	$ 3,031,901
	b. Disability retirement	497,810	116,272
	c. Beneficiaries	483,981	186,362
	d. Total	$ 8,350,811	$ 3,334,535
3.	Inactive members		
	a. Vested terminations	$ 504,951	$ 59,235
	b. Nonvested terminations	49,782	6,184
	c. Total	$ 554,733	$ 65,419
4.	Total actuarial present value of future benefits	$ 16,335,020	$ 6,085,284

Development of Actuarially Determined Contribution Rate
Retirement Benefits

		June 30, 2019	
		Non-Hazardous (1)	Hazardous (2)
1.	Total normal cost rate		
	a. Service retirement	7.51%	15.26%
	b. Deferred termination benefits and refunds	2.17%	2.20%
	c. Survivor benefits	0.38%	0.29%
	d. Disability benefits	0.71%	1.30%
	e. Total	10.77%	19.05%
2.	Less: member contribution rate	-5.00%	-8.00%
3.	Total employer normal cost rate	5.77%	11.05%
4.	Administrative expenses	0.86%	0.31%
5.	Net employer normal cost rate	6.63%	11.36%
6.	UAAL amortization contribution	19.58%	34.95%
7.	Total calculated employer contribution	26.21%	46.31%

Actuarial Balance Sheet

Non-Hazardous Members Retirement

(Dollar amounts expressed in thousands)

	June 30, 2019 (1)	June 30, 2018 (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	$ 7,049,527	$ 6,950,225
b. Present value of future member contributions	$ 972,742	$ 976,392
c. Present value of future employer contributions		
i. Normal cost contributions	$ 1,006,165	$ 850,617
ii. Unfunded accrued liability contributions	7,306,586	6,241,280
iii. Total future employer contributions	$ 8,312,751	$ 7,091,897
d. Total assets	$ 16,335,020	$ 15,018,514
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	$ 1,978,907	$ 1,827,009
ii. Accrued liability	5,450,569	4,994,786
iii. Total present value of future benefits	$ 7,429,476	$ 6,821,795
b. Present value of benefits payable on account of current retired members and beneficiaries	$ 8,350,811	$ 7,754,521
c. Present value of benefits payable on account of current inactive members	$ 554,733	$ 442,198
d. Total liabilities	$ 16,335,020	$ 15,018,514

Actuarial Balance Sheet

Hazardous Members Retirement

(Dollar amounts expressed in thousands)

		June 30, 2019 (1)	June 30, 2018 (2)
1.	Assets - Present and Expected Future Resources		
a.	Current assets (actuarial value)	$ 2,375,106	$ 2,321,721
b.	Present value of future member contributions	$ 376,964	$ 276,852
c.	Present value of future employer contributions		
i.	Normal cost contributions	$ 462,955	$ 180,354
ii.	Unfunded accrued liability contributions	2,870,259	2,470,827
iii.	Total future employer contributions	$ 3,333,214	$ 2,651,181
d.	Total assets	$ 6,085,284	$ 5,249,754
2.	Liabilities - Present Value of Expected Future Benefit Payments		
a.	Active members		
i.	Present value of future normal costs	$ 839,919	$ 457,206
ii.	Accrued liability	1,845,411	1,641,490
iii.	Total present value of future benefits	$ 2,685,330	$ 2,098,696
b.	Present value of benefits payable on account of current retired members and beneficiaries	$ 3,334,535	$ 3,094,100
c.	Present value of benefits payable on account of current inactive members	$ 65,419	$ 56,958
d.	Total liabilities	$ 6,085,284	$ 5,249,754

Reconciliation of Retirement Net Assets

(Dollar amounts expressed in thousands)[1]

		Year Ending		
		June 30, 2019		June 30, 2019
		(1)		(2)
		Non-Hazardous		**Hazardous**
1. Value of assets at beginning of year	$	7,018,963	$	2,348,337
2. Revenue for the year				
a. Contributions				
i. Member contributions	$	159,064	$	58,661
ii. Employer contributions		393,302		137,666
iii. Other contributions (less 401h)		195		400
iii. Total	$	552,561	$	196,727
b. Income				
i. Interest, dividends, and other income	$	169,822	$	57,285
ii. Investment expenses		(50,068)		(16,559)
iii. Net	$	119,754	$	40,726
c. Net realized and unrealized gains (losses)		270,910		91,507
d. Total revenue	$	943,225	$	328,960
3. Expenditures for the year				
a. Disbursements				
i. Refunds	$	14,387	$	2,854
ii. Regular annuity benefits		766,221		259,009
iii. Other benefit payments		0		0
iv. Transfers to other systems		0		0
v. Total	$	780,608	$	261,863
b. Administrative expenses and depreciation		21,659		1,726
c. Total expenditures	$	802,267	$	263,588
4. Increase in net assets (Item 2. - Item 3.)	$	140,958	$	65,371
5. Value of assets at end of year (Item 1. + Item 4.)	$	7,159,921	$	2,413,708
6. Net external cash flow				
a. Dollar amount	$	(249,706)	$	(66,862)
b. Percentage of market value		-3.5%		-2.8%
7. Estimated annual return on net assets		5.7%		5.7%

[1] Amounts may not add due to rounding

[1] Excludes 401h assets

Development of Actuarial Value of Assets

Non-Hazardous Members Retirement

(Dollar amounts expressed in thousands)*

	Year Ending		June 30, 2019
1.	Actuarial value of assets at beginning of year	$	6,950,225
2.	Market value of assets at beginning of year	$	7,018,963
3.	Net new investments		
	a. Contributions	$	552,561
	b. Benefit payments		(780,608)
	c. Administrative expenses		(21,659)
	d. Subtotal	$	(249,706)
4.	Market value of assets at end of year	$	7,159,921
5.	Net earnings (Item 4. - Item 2. - Item 3.d.)	$	390,664
6.	Assumed investment return rate for fiscal year		6.25%
7.	Expected return for immediate recognition	$	430,882
8.	Excess return for phased recognition	$	(40,218)

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2019	$	(40,218)	$	(8,044)
b.	2018		163,357		32,671
c.	2017		369,213		73,843
d.	2016		(515,652)		(103,130)
e.	2015		(386,073)		(77,215)
f.	Total			$	(81,875)

10.	Actuarial value of assets as of June 30, 2019 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	7,049,527
11.	Ratio of actuarial value to market value		98.5%
12.	Estimated annual return on actuarial value of assets		5.1%

* Amounts may not add due to rounding

Development of Actuarial Value of Assets

Hazardous Members Retirement

(Dollar amounts expressed in thousands)*

	Year Ending		June 30, 2019
1.	Actuarial value of assets at beginning of year	$	2,321,721
2.	Market value of assets at beginning of year	$	2,348,337
3.	Net new investments		
	a. Contributions	$	196,727
	b. Benefit payments		(261,863)
	c. Administrative expenses		(1,726)
	d. Subtotal	$	(66,862)
4.	Market value of assets at end of year	$	2,413,708
5.	Net earnings (Item 4. - Item 2. - Item 3.d.)	$	132,233
6.	Assumed investment return rate for fiscal year		6.25%
7.	Expected return for immediate recognition	$	144,682
8.	Excess return for phased recognition	$	(12,449)

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2019	$	(12,449)	$	(2,490)
b.	2018		54,598		10,920
c.	2017		120,774		24,155
d.	2016		(162,540)		(32,508)
e.	2015		(122,554)		(24,511)
f.	Total			$	(24,434)

10.	Actuarial value of assets as of June 30, 2019 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	2,375,106
11.	Ratio of actuarial value to market value		98.4%
12.	Estimated annual return on actuarial value of assets		5.3%

* Amounts may not add due to rounding

Schedule of Funding Progress
Retirement Benefits
(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Value of Assets (AVA) (2)	Actuarial Accrued Liability (AAL) (3)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2) (4)	Funded Ratio (2)/(3) (5)	Annual Covered Payroll (6)	UAAL as % of Payroll (4)/(6) (7)
			Non-Hazardous Members			
2011	$ 5,629,611	$ 8,918,085	$ 3,288,474	63.1%	$ 2,276,596	144.4%
2012	5,547,236	9,139,568	3,592,332	60.7%	2,236,546	160.6%
2013	5,637,094	9,378,876	3,741,782	60.1%	2,236,277	167.3%
2014	6,117,134	9,772,523	3,655,389	62.6%	2,272,270	160.9%
2015	6,474,849	10,740,325	4,265,477	60.3%	2,296,716	185.7%
2016	6,535,372	11,076,457	4,541,084	59.0%	2,352,762	193.0%
2017	6,764,873	12,803,510	6,038,637	52.8%	2,452,407	246.2%
2018	6,950,225	13,191,505	6,241,280	52.7%	2,466,801	253.0%
2019	7,049,527	14,356,113	7,306,586	49.1%	2,521,860	289.7%
			Hazardous Members			
2011	$ 1,779,545	$ 2,859,041	$ 1,079,496	62.2%	$ 466,964	231.2%
2012	1,747,379	3,009,992	1,262,613	58.1%	464,229	272.0%
2013	1,801,691	3,124,206	1,322,514	57.7%	461,673	286.5%
2014	1,967,640	3,288,826	1,321,186	59.8%	479,164	275.7%
2015	2,096,783	3,613,308	1,516,525	58.0%	483,641	313.6%
2016	2,139,119	3,704,456	1,565,337	57.7%	492,851	317.6%
2017	2,238,320	4,649,047	2,410,727	48.1%	541,633	445.1%
2018	2,321,721	4,792,548	2,470,827	48.4%	533,618	463.0%
2019	2,375,106	5,245,365	2,870,259	45.3%	559,353	513.1%
			Total CERS Members			
2011	$ 7,409,156	$ 11,777,126	$ 4,367,970	62.9%	$ 2,743,560	159.2%
2012	7,294,615	12,149,560	4,854,945	60.0%	2,700,775	179.8%
2013	7,438,785	12,503,082	5,064,297	59.5%	2,697,950	187.7%
2014	8,084,774	13,061,349	4,976,575	61.9%	2,751,434	180.9%
2015	8,571,632	14,353,633	5,782,001	59.7%	2,780,357	208.0%
2016	8,674,491	14,780,913	6,106,422	58.7%	2,845,613	214.6%
2017	9,003,193	17,452,557	8,449,364	51.6%	2,994,040	282.2%
2018	9,271,946	17,984,053	8,712,107	51.6%	3,000,419	290.4%
2019	9,424,633	19,601,478	10,176,845	48.1%	3,081,213	330.3%

Summary of Principal Assumptions and Methods

Below is a summary of the principal economic assumptions, cost method, and the method for financing the unfunded actuarial accrued liability:

	Non-Hazardous	Hazardous
Valuation date:	June 30, 2019	June 30, 2019
Actuarial cost method:	Entry Age Normal	Entry Age Normal
Amortization method:	Level percentage of payroll (2% payroll growth assumed)	Level percentage of payroll (2% payroll growth assumed)
Amortization period for contribution rate:	24-year closed period	24-year closed period
Asset valuation method:	5-Year Smoothed Market	5-Year Smoothed Market
Actuarial assumptions:		
Investment rate of return	6.25%	6.25%
Projected salary increases	3.30% to 10.30% (varies by service)	3.55% to 19.05% (varies by service)
Inflation	2.30%	2.30%
Post-retirement benefit adjustments	0.00%	0.00%
Retiree Mortality	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale use a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale use a base year of 2019.

Solvency Test
Retirement Benefits
(Dollar amounts expressed in thousands)

	Actuarial Accrued Liability				Portion of Aggregate Accrued Liabilities Covered by Assets		
June 30,	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed)	Valuation Assets	Active	Retired	ER Financed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Non-Hazardous Members							
2009	$ 991,629	$ 4,542,483	$ 2,378,802	$ 5,650,790	100.0%	100.0%	4.9%
2010	1,063,747	4,890,659	2,504,616	5,546,857	100.0%	91.7%	0.0%
2011	1,110,967	5,209,784	2,597,334	5,629,611	100.0%	86.7%	0.0%
2012	1,117,549	5,416,933	2,605,085	5,547,236	100.0%	81.8%	0.0%
2013	1,149,611	5,638,371	2,590,894	5,637,094	100.0%	79.6%	0.0%
2014	1,204,383	5,873,279	2,694,860	6,117,134	100.0%	83.6%	0.0%
2015	1,216,585	6,489,863	3,033,878	6,474,849	100.0%	81.0%	0.0%
2016	1,231,027	6,785,530	3,059,900	6,535,372	100.0%	78.2%	0.0%
2017	1,277,432	7,731,682	3,794,396	6,764,873	100.0%	71.0%	0.0%
2018	1,269,287	8,196,719	3,725,499	6,950,225	100.0%	69.3%	0.0%
2019	1,280,679	8,905,544	4,169,890	7,049,527	100.0%	64.8%	0.0%
Hazardous Members							
2009	$ 350,309	$ 1,540,263	$ 687,873	$ 1,751,488	100.0%	91.0%	0.0%
2010	369,613	1,622,684	679,855	1,749,464	100.0%	85.0%	0.0%
2011	382,072	1,768,512	708,457	1,779,545	100.0%	79.0%	0.0%
2012	381,672	1,889,884	738,435	1,747,379	100.0%	72.3%	0.0%
2013	390,471	1,988,030	745,705	1,801,691	100.0%	71.0%	0.0%
2014	415,070	2,077,517	796,239	1,967,640	100.0%	74.7%	0.0%
2015	422,359	2,297,703	893,246	2,096,783	100.0%	72.9%	0.0%
2016	428,713	2,388,712	887,031	2,139,119	100.0%	71.6%	0.0%
2017	458,808	2,910,601	1,279,638	2,238,320	100.0%	61.1%	0.0%
2018	442,637	3,151,058	1,198,853	2,321,721	100.0%	59.6%	0.0%
2019	458,559	3,399,954	1,386,852	2,375,106	100.0%	56.4%	0.0%

INSURANCE BENEFITS

ACTUARIAL TABLES

Development of Unfunded Actuarial Accrued Liability
Insurance Benefits

(Dollar amounts expressed in thousands)

		June 30, 2019	
		Non-Hazardous (1)	Hazardous (2)
1.	Projected payroll of active members	$ 2,521,860	$ 559,353
2.	Present value of future pay	$ 18,726,729	$ 4,746,141
3.	Normal cost rate		
	a. Total normal cost rate	3.40%	5.84%
	b. Less: member contribution rate	-0.49%	-0.46%
	c. Employer normal cost rate	2.91%	5.38%
4.	Actuarial accrued liability for active members		
	a. Present value of future benefits	$ 2,337,913	$ 863,948
	b. Less: present value of future normal costs	(600,658)	(203,930)
	c. Actuarial accrued liability	$ 1,737,255	$ 660,018
5.	Total actuarial accrued liability		
	a. Retirees and beneficiaries	$ 1,643,126	$ 1,053,842
	b. Inactive members	187,566	19,019
	c. Active members (Item 4c)	1,737,255	660,018
	d. Total	$ 3,567,947	$ 1,732,879
6.	Actuarial value of assets	$ 2,523,249	$ 1,313,659
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	$ 1,044,698	$ 419,220
8.	Funded Ratio	70.7%	75.8%

Development of Actuarially Determined Contribution Rate
Insurance Benefits

		June 30, 2019	
		Non-Hazardous (1)	Hazardous (2)
1.	Total normal cost rate	3.40%	5.84%
2.	Less: member contribution rate	-0.49%	-0.46%
3.	Total employer normal cost rate	2.91%	5.38%
4.	Administrative expenses	0.04%	0.08%
5.	Net employer normal cost rate	2.95%	5.46%
6.	UAAL amortization contribution	2.83%	5.01%
7.	Total calculated employer contribution Max (0%, item 5. + item6.)	5.78%	10.47%

Actuarial Balance Sheet

Non-Hazardous Members Insurance

(Dollar amounts expressed in thousands)

		June 30, 2019 (1)		June 30, 2018 (2)
1. Assets - Present and Expected Future Resources				
a. Current assets (actuarial value)	$	2,523,249	$	2,371,430
b. Present value of future member contributions	$	106,109	$	106,356
c. Present value of future employer contributions				
i. Normal cost contributions	$	494,549	$	498,909
ii. Unfunded accrued liability contributions		1,044,698		721,194
iii. Total future employer contributions	$	1,539,247	$	1,220,103
d. Total assets	$	4,168,605	$	3,697,889
2. Liabilities - Present Value of Expected Future Benefit Payments				
a. Active members				
i. Present value of future normal costs	$	600,658	$	605,265
ii. Accrued liability		1,737,255		1,567,301
iii. Total present value of future benefits	$	2,337,913	$	2,172,566
b. Present value of benefits payable on account of current retired members and beneficiaries	$	1,643,126	$	1,374,325
c. Present value of benefits payable on account of current inactive members	$	187,566	$	150,998
d. Total liabilities	$	4,168,605	$	3,697,889

Actuarial Balance Sheet

Hazardous Members Insurance

(Dollar amounts expressed in thousands)

	June 30, 2019 (1)	June 30, 2018 (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	$ 1,313,659	$ 1,256,306
b. Present value of future member contributions	$ 31,194	$ 19,064
c. Present value of future employer contributions		
i. Normal cost contributions	$ 172,736	$ 114,831
ii. Unfunded accrued liability contributions	419,220	427,722
iii. Total future employer contributions	$ 591,956	$ 542,553
d. Total assets	$ 1,936,809	$ 1,817,923
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	$ 203,930	$ 133,895
ii. Accrued liability	660,018	682,311
iii. Total present value of future benefits	$ 863,948	$ 816,206
b. Present value of benefits payable on account of current retired members and beneficiaries	$ 1,053,842	$ 983,359
c. Present value of benefits payable on account of current inactive members	$ 19,019	$ 18,358
d. Total liabilities	$ 1,936,809	$ 1,817,923

Reconciliation of Insurance Net Assets

(Dollar amounts expressed in thousands)[1]

	Year Ending	
	June 30, 2019	June 30, 2019
	(1)	(2)
	Non-Hazardous	**Hazardous**
1. Value of assets at beginning of year	$ 2,414,126	$ 1,280,982
2. Revenue for the year		
a. Contributions		
i. Member contributions	$ 11,801	$ 2,458
ii. Employer contributions	135,570	61,106
iii. Other contributions (less 401h)	4,095	1,171
iii. Total	$ 151,466	$ 64,735
b. Income		
i. Interest, dividends, and other income	$ 60,556	$ 32,356
ii. Investment expenses	(18,887)	(10,468)
iii. Net	$ 41,670	$ 21,888
c. Net realized and unrealized gains (losses)	95,921	51,429
d. Total revenue	$ 289,057	$ 138,052
3. Expenditures for the year		
a. Disbursements		
i. Refunds	$ 0	$ 0
ii. Healthcare premium subsidies	133,004	78,190
iii. Other benefit payments[2]	(210)	(303)
iv. Transfers to other systems	0	0
v. Total	$ 132,794	$ 77,886
b. Administrative expenses and depreciation	877	434
c. Total expenditures	$ 133,672	$ 78,320
4. Increase in net assets (Item 2. - Item 3.)	$ 155,385	$ 59,732
5. Value of assets at end of year (Item 1. + Item 4.)	$ 2,569,511	$ 1,340,714
6. Net external cash flow		
a. Dollar amount	$ 17,795	$ (13,585)
b. Percentage of market value	0.7%	-1.0%
7. Estimated annual return on net assets	5.7%	5.8%

[1] Amounts may not add due to rounding

[1] Includes 401h assets

[2] Benefit payments have been offset by Medicare Drug Reimbursements, Insurance Premiums, and Humana Gain Share Payments

Development of Actuarial Value of Assets

Non-Hazardous Members Insurance
(Dollar amounts expressed in thousands)*

	Year Ending		June 30, 2019
1.	Actuarial value of assets at beginning of year	$	2,371,430
2.	Market value of assets at beginning of year	$	2,414,126
3.	Net new investments		
	a. Contributions	$	151,466
	b. Benefit payments		(132,794)
	c. Administrative expenses		(877)
	d. Subtotal	$	17,795
4.	Market value of assets at end of year	$	2,569,511
5.	Net earnings (Item 4. - Item 2. - Item 3.d.)	$	137,590
6.	Assumed investment return rate for fiscal year		6.25%
7.	Expected return for immediate recognition	$	151,439
8.	Excess return for phased recognition	$	(13,849)

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2019	$	(13,849)	$	(2,770)
b.	2018		63,800		12,760
c.	2017		121,364		24,273
d.	2016		(147,421)		(29,484)
e.	2015		(110,970)		(22,194)
f.	Total			$	(17,415)

10.	Actuarial value of assets as of June 30, 2019 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	2,523,249
11.	Ratio of actuarial value to market value		98.2%
12.	Estimated annual return on actuarial value of assets		5.6%

* Amounts may not add due to rounding

Development of Actuarial Value of Assets

Hazardous Members Insurance

(Dollar amounts expressed in thousands)*

	Year Ending		June 30, 2019
1.	Actuarial value of assets at beginning of year	$	1,256,306
2.	Market value of assets at beginning of year	$	1,280,982
3.	Net new investments		
	a. Contributions	$	64,735
	b. Benefit payments		(77,886)
	c. Administrative expenses		(434)
	d. Subtotal	$	(13,585)
4.	Market value of assets at end of year	$	1,340,714
5.	Net earnings (Item 4. - Item 2. - Item 3.d.)	$	73,317
6.	Assumed investment return rate for fiscal year		6.25%
7.	Expected return for immediate recognition	$	79,637
8.	Excess return for phased recognition	$	(6,320)

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2019	$	(6,320)	$	(1,264)
b.	2018		36,099		7,220
c.	2017		65,383		13,077
d.	2016		(78,507)		(15,701)
e.	2015		(60,152)		(12,030)
f.	Total			$	(8,699)

10.	Actuarial value of assets as of June 30, 2019 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	1,313,659
11.	Ratio of actuarial value to market value		98.0%
12.	Estimated annual return on actuarial value of assets		5.7%

* Amounts may not add due to rounding

Schedule of Funding Progress
Insurance Benefits
(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Value of Assets (AVA) (2)	Actuarial Accrued Liability (AAL) (3)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2) (4)	Funded Ratio (2)/(3) (5)	Annual Covered Payroll (6)	UAAL as % of Payroll (4)/(6) (7)
			Non-Hazardous Members			
2011	$ 1,433,451	$ 3,073,973	$ 1,640,522	46.6%	$ 2,276,596	72.1%
2012	1,512,854	2,370,771	857,917	63.8%	2,236,546	38.4%
2013	1,628,244	2,443,894	815,650	66.6%	2,236,277	36.5%
2014	1,831,199	2,616,915	785,715	70.0%	2,272,270	34.6%
2015	1,997,456	2,907,827	910,371	68.7%	2,296,716	39.6%
2016	2,079,811	2,988,121	908,310	69.6%	2,352,762	38.6%
2017	2,227,401	3,355,151	1,127,750	66.4%	2,452,407	46.0%
2018	2,371,430	3,092,624	721,194	76.7%	2,466,801	29.2%
2019	2,523,249	3,567,947	1,044,698	70.7%	2,521,860	41.4%
			Hazardous Members			
2011	$ 770,790	$ 1,647,703	$ 876,912	46.8%	$ 466,964	187.8%
2012	829,041	1,364,843	535,802	60.7%	464,229	115.4%
2013	892,774	1,437,333	544,558	62.1%	461,673	118.0%
2014	997,733	1,493,864	496,131	66.8%	479,164	103.5%
2015	1,087,707	1,504,015	416,308	72.3%	483,641	86.1%
2016	1,135,784	1,558,818	423,034	72.9%	492,851	85.8%
2017	1,196,780	1,788,433	591,653	66.9%	541,633	109.2%
2018	1,256,306	1,684,028	427,722	74.6%	533,618	80.2%
2019	1,313,659	1,732,879	419,220	75.8%	559,353	74.9%
			Total CERS Members			
2011	$ 2,204,241	$ 4,721,676	$ 2,517,435	46.7%	$ 2,743,560	91.8%
2012	2,341,895	3,735,614	1,393,719	62.7%	2,700,775	51.6%
2013	2,521,018	3,881,227	1,360,209	65.0%	2,697,950	50.4%
2014	2,828,932	4,110,779	1,281,847	68.8%	2,751,434	46.6%
2015	3,085,163	4,411,842	1,326,679	69.9%	2,780,357	47.7%
2016	3,215,595	4,546,939	1,331,344	70.7%	2,845,613	46.8%
2017	3,424,181	5,143,584	1,719,403	66.6%	2,994,040	57.4%
2018	3,627,736	4,776,652	1,148,916	75.9%	3,000,419	38.3%
2019	3,836,908	5,300,826	1,463,918	72.4%	3,081,213	47.5%

Solvency Test
Insurance Benefits
(Dollar amounts expressed in thousands)

	Actuarial Accrued Liability				Portion of Aggregate Accrued Liabilities Covered by Assets		
June 30,	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed)	Valuation Assets	Active	Retired	ER Financed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Non-Hazardous Members				
2009	$ -	$ 1,478,783	$ 1,591,603	$ 1,216,632	100.0%	82.3%	0.0%
2010	-	1,526,533	1,631,807	1,293,039	100.0%	84.7%	0.0%
2011	-	1,460,808	1,613,165	1,433,451	100.0%	98.1%	0.0%
2012	-	1,146,908	1,223,864	1,512,854	100.0%	100.0%	29.9%
2013	-	1,205,599	1,238,295	1,628,244	100.0%	100.0%	34.1%
2014	-	1,318,183	1,298,732	1,831,199	100.0%	100.0%	39.5%
2015	-	1,372,597	1,535,231	1,997,456	100.0%	100.0%	40.7%
2016	-	1,484,937	1,503,184	2,079,811	100.0%	100.0%	39.6%
2017	-	1,603,438	1,751,713	2,227,401	100.0%	100.0%	35.6%
2018	-	1,525,323	1,567,301	2,371,430	100.0%	100.0%	54.0%
2019	-	1,830,692	1,737,255	2,523,249	100.0%	100.0%	39.9%
			Hazardous Members				
2009	$ -	$ 725,900	$ 867,648	$ 651,131	100.0%	89.7%	0.0%
2010	-	814,300	860,403	692,770	100.0%	85.1%	0.0%
2011	-	771,631	876,071	770,790	100.0%	99.9%	0.0%
2012	-	575,099	789,744	829,041	100.0%	100.0%	32.2%
2013	-	660,955	776,377	892,774	100.0%	100.0%	29.9%
2014	-	700,312	793,553	997,733	100.0%	100.0%	37.5%
2015	-	790,714	713,301	1,087,707	100.0%	100.0%	41.6%
2016	-	879,360	679,458	1,135,784	100.0%	100.0%	37.7%
2017	-	994,764	793,669	1,196,780	100.0%	100.0%	25.5%
2018	-	1,001,717	682,311	1,256,306	100.0%	100.0%	37.3%
2019	-	1,072,861	660,018	1,313,659	100.0%	100.0%	36.5%

SECTION 4

MEMBERSHIP INFORMATION

Membership Tables

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Summary of Membership Data

(Total dollar amounts expressed in thousands)

	Non-Hazardous June 30, 2019 (1)	Hazardous June 30, 2019 (2)	Total June 30, 2019 (3)	Total June 30, 2018 (4)
1. Active members				
a. Males	29,297	8,313	37,610	37,389
b. Females	52,209	1,161	53,370	53,692
c. Total members	81,506	9,474	90,980	91,081
d. Total annualized prior year salaries	$ 2,521,860	$ 559,353	$ 3,081,213	$ 3,000,419
e. Average salary[2]	$ 30,941	$ 59,041	$ 33,867	$ 32,942
f. Average age	47.7	38.6	46.7	46.8
g. Average service	9.1	10.1	9.2	9.3
h. Member contributions with interest	$ 1,280,679	$ 458,559	$ 1,739,238	$ 1,711,924
i. Average contributions with interest[2]	$ 15,713	$ 48,402	$ 19,117	$ 18,796
2. Vested inactive members[1]				
a. Number	50,768	1,782	52,550	18,575
b. Total annual deferred benefits	$ 77,396	$ 7,387	$ 84,783	$ 73,864
c. Average annual deferred benefit[2]	$ 1,525	$ 4,145	$ 1,613	$ 3,977
d. Average age at the valuation date	52.3	45.3	52.1	50.3
3. Nonvested inactive members[1]				
a. Number	40,775	1,640	42,415	71,652
b. Total member contributions with interest	$ 48,090	$ 5,484	$ 53,574	$ 82,084
c. Average contributions with interest[2]	$ 1,179	$ 3,344	$ 1,263	$ 1,146
4. Service retirees				
a. Number	54,493	8,275	62,768	60,039
b. Total annual benefits	$ 644,546	$ 231,301	$ 875,847	$ 831,703
c. Average annual benefit[2]	$ 11,828	$ 27,952	$ 13,954	$ 13,853
d. Average age at the valuation date	70.6	62.0	69.4	69.2
5. Disabled retirees				
a. Number	4,198	576	4,774	4,729
b. Total annual benefits	$ 48,289	$ 9,697	$ 57,986	$ 56,695
c. Average annual benefit[2]	$ 11,503	$ 16,835	$ 12,146	$ 11,989
d. Average age at the valuation date	65.5	57.1	64.5	64.1
6. Beneficiaries				
a. Number	5,848	1,172	7,020	6,757
b. Total annual benefits	$ 54,282	$ 17,815	$ 72,097	$ 67,650
c. Average annual benefit[2]	$ 9,282	$ 15,200	$ 10,270	$ 10,012
d. Average age at the valuation date	68.2	58.6	66.6	66.4

[1] Vested inactive member section includes Tier 1 members eligible for a benefit equal to the actuarially equivalent of two times the member's contribution balance. These members were included in the nonvested inactive member section in 2018.

[2] Average dollar amounts shown are expresed to the dollar.

Summary of Historical Active Membership

	Active Members		Covered Payroll[1]		Average Annual Pay	
June 30,	Number	Percent Increase /(Decrease)	Amount in Thousands	Percent Increase /(Decrease)	Amount	Percent Increase /(Decrease)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Non-Hazardous Members			
2010	84,681		$ 2,236,855		$ 26,415	
2011	85,285	0.7%	2,276,596	1.8%	26,694	1.1%
2012	83,052	-2.6%	2,236,546	-1.8%	26,929	0.9%
2013	81,815	-1.5%	2,236,277	0.0%	27,333	1.5%
2014	81,115	-0.9%	2,272,270	1.6%	28,013	2.5%
2015	80,852	-0.3%	2,296,716	1.1%	28,406	1.4%
2016	80,664	-0.2%	2,352,762	2.4%	29,167	2.7%
2017	82,198	1.9%	2,452,407	4.2%	29,835	2.3%
2018	81,818	-0.5%	2,466,801	0.6%	30,150	1.1%
2019	81,506	-0.4%	2,521,860	2.2%	30,941	2.6%
			Hazardous Members			
2010	9,562		$ 466,549		$ 48,792	
2011	9,407	-1.6%	466,964	0.1%	49,640	1.7%
2012	9,130	-2.9%	464,229	-0.6%	50,847	2.4%
2013	9,123	-0.1%	461,673	-0.6%	50,605	-0.5%
2014	9,194	0.8%	479,164	3.8%	52,117	3.0%
2015	9,172	-0.2%	483,641	0.9%	52,730	1.2%
2016	9,084	-1.0%	492,851	1.9%	54,255	2.9%
2017	9,495	4.5%	541,633	9.9%	57,044	5.1%
2018	9,263	-2.4%	533,618	-1.5%	57,607	1.0%
2019	9,474	2.3%	559,353	4.8%	59,041	2.5%

[1] Covered payroll is the annualized, projected compensation for the following year and does not include payroll attributable to working retirees.

Distribution of Active Members by Age and by Years of Service

Non-Hazardous Members

	Years of Credited Service												
Attained Age	0 Count & Avg. Comp.	1 Count & Avg. Comp.	2 Count & Avg. Comp.	3 Count & Avg. Comp.	4 Count & Avg. Comp.	5-9 Count & Avg. Comp.	10-14 Count & Avg. Comp.	15-19 Count & Avg. Comp.	20-24 Count & Avg. Comp.	25-29 Count & Avg. Comp.	30-34 Count & Avg. Comp.	35 & Over Count & Avg. Comp.	Total Count & Avg. Comp.
Under 20	164	4	2	1	0	0	1	0	0	0	0	0	172
	$12,640	$22,490	$21,294	$13,027	$0	$0	$16,865	$0	$0	$0	$0	$0	$12,996
20-24	1,438	707	308	133	49	15	2	0	0	0	0	0	2,652
	$17,918	$24,347	$27,040	$29,492	$28,212	$34,176	$30,324	$0	$0	$0	$0	$0	$21,563
25-29	1,620	1,119	812	571	397	609	13	0	1	1	0	0	5,143
	$20,588	$25,555	$28,540	$28,790	$31,430	$35,167	$35,407	$0	$16,174	$80,496	$0	$0	$26,446
30-34	1,373	1,076	803	652	542	1,406	511	9	0	0	0	0	6,372
	$20,346	$25,499	$26,883	$28,981	$32,769	$37,041	$41,255	$51,163	$0	$0	$0	$0	$29,384
35-39	1,339	1,075	848	719	600	1,721	1,200	495	26	0	0	0	8,023
	$20,276	$24,362	$26,442	$27,468	$28,381	$34,188	$42,715	$44,742	$58,026	$0	$0	$0	$30,698
40-44	1,173	959	803	691	631	1,980	1,514	1,166	438	24	0	0	9,379
	$21,234	$24,066	$27,333	$28,326	$28,622	$31,656	$39,288	$45,754	$49,726	$56,754	$0	$0	$32,650
45-49	975	789	747	657	600	2,185	2,007	1,634	1,032	241	7	0	10,874
	$21,686	$24,917	$27,097	$26,518	$29,043	$31,111	$35,016	$40,957	$50,519	$56,130	$79,771	$0	$33,777
50-54	903	703	612	559	551	1,973	2,134	2,101	1,433	435	66	14	11,484
	$22,370	$24,947	$26,906	$28,881	$28,410	$30,379	$32,944	$35,407	$41,433	$53,273	$59,916	$83,009	$32,941
55-59	802	607	536	483	520	1,933	2,162	2,510	1,885	642	116	42	12,238
	$19,631	$23,815	$26,768	$27,456	$28,184	$30,791	$33,118	$33,433	$37,038	$46,450	$53,804	$64,199	$32,365
60-64	554	427	443	366	370	1,498	1,569	1,733	1,312	607	111	45	9,035
	$17,090	$23,085	$23,729	$26,094	$28,171	$28,544	$32,517	$34,100	$35,900	$41,481	$48,224	$60,375	$31,326
65 & Over	518	352	306	250	280	1,322	1,192	898	555	316	89	56	6,134
	$14,910	$15,695	$19,862	$20,270	$21,802	$24,291	$28,013	$32,023	$33,981	$37,088	$37,827	$58,375	$26,406
Total	10,859	7,818	6,220	5,082	4,540	14,642	12,305	10,546	6,682	2,266	389	157	81,506
	$19,842	$24,257	$26,551	$27,556	$28,849	$31,269	$34,860	$36,890	$40,496	$46,277	$50,061	$62,703	$30,941

Distribution of Active Members by Age and by Years of Service

Hazardous Members

	Years of Credited Service												
Attained Age	0 Count & Avg. Comp.	1 Count & Avg. Comp.	2 Count & Avg. Comp.	3 Count & Avg. Comp.	4 Count & Avg. Comp.	5-9 Count & Avg. Comp.	10-14 Count & Avg. Comp.	15-19 Count & Avg. Comp.	20-24 Count & Avg. Comp.	25-29 Count & Avg. Comp.	30-34 Count & Avg. Comp.	35 & Over Count & Avg. Comp.	Total Count & Avg. Comp.
Under 20	2	0	0	0	0	0	0	0	0	0	0	0	2
	$29,994	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$29,994
20-24	222	148	68	27	7	4	0	1	0	0	0	0	477
	$36,019	$44,524	$46,717	$42,514	$52,742	$41,717	$0	$79,118	$0	$0	$0	$0	$40,934
25-29	228	264	278	217	165	248	2	0	0	0	0	0	1,402
	$37,611	$45,794	$49,230	$49,511	$53,850	$54,907	$59,656	$0	$0	$0	$0	$0	$48,300
30-34	121	149	145	143	156	785	227	2	0	0	0	0	1,728
	$36,040	$46,293	$50,186	$50,328	$54,761	$57,247	$62,834	$68,850	$0	$0	$0	$0	$54,176
35-39	46	48	64	57	77	442	718	200	9	0	0	0	1,661
	$38,312	$45,695	$47,395	$51,250	$55,491	$58,690	$65,151	$67,057	$82,788	$0	$0	$0	$60,842
40-44	28	34	31	33	23	204	454	559	200	16	0	0	1,582
	$37,317	$41,859	$46,748	$50,861	$54,611	$56,555	$64,803	$68,763	$78,981	$88,943	$0	$0	$65,403
45-49	15	20	25	30	22	123	257	463	348	57	2	0	1,362
	$29,766	$46,750	$41,170	$48,328	$51,098	$55,384	$62,575	$68,616	$79,594	$91,967	$95,321	$0	$68,120
50-54	10	10	15	7	10	60	155	205	116	54	9	0	651
	$44,202	$40,265	$45,518	$40,882	$53,508	$53,530	$59,401	$66,370	$74,542	$88,359	$100,411	$0	$65,584
55-59	6	8	5	9	5	33	114	88	60	32	11	3	374
	$42,646	$42,907	$48,674	$51,387	$47,396	$52,881	$66,588	$64,692	$69,437	$72,996	$88,421	$118,771	$65,246
60-64	4	3	2	0	3	19	46	33	16	15	2	3	146
	$45,714	$34,632	$40,387	$0	$58,295	$47,047	$60,350	$65,733	$66,952	$61,703	$82,594	$103,688	$60,648
65 & Over	1	1	1	4	1	7	26	35	7	2	0	4	89
	$29,208	$39,704	$33,042	$63,924	$20,441	$43,259	$48,640	$61,337	$87,866	$53,553	$0	$90,834	$58,178
Total	683	685	634	527	469	1,925	1,999	1,586	756	176	24	10	9,474
	$36,831	$45,282	$48,409	$49,606	$54,195	$56,710	$63,783	$67,749	$77,698	$84,120	$93,007	$103,071	$59,041

Distribution of Annuitant Monthly Benefit by Status and Age
Non-Hazardous Retirees and Beneficiaries
(Dollar amounts expressed in thousands)

	Retirement		Disability		Survivors & Beneficiaries		Total	
Current Age (1)	Number of Annuitants (2)	Total Annual Benefit Amount (3)	Number of Annuitants (4)	Total Annual Benefit Amount (5)	Number of Annuitants (6)	Total Annual Benefit Amount (7)	Number of Annuitants (8)	Total Annual Benefit Amount (9)
Under 50	291	$ 6,782	174	$ 2,120	693	$ 5,604	1,158	$ 14,506
50 - 54	1,166	27,146	315	4,003	284	2,526	1,765	33,675
55 - 59	4,148	72,265	639	8,584	455	4,874	5,242	85,723
60 - 64	8,749	125,782	956	11,436	645	6,839	10,350	144,057
65 - 69	12,993	155,857	832	9,466	821	8,814	14,646	174,137
70 - 74	11,484	121,483	626	6,681	845	8,137	12,955	136,301
75 - 79	7,738	72,105	392	3,827	810	7,599	8,940	83,531
80 - 84	4,638	39,238	192	1,645	630	5,233	5,460	46,116
85 - 89	2,268	17,569	60	460	401	3,020	2,729	21,049
90 And Over	1,018	6,318	12	68	264	1,636	1,294	8,022
Total	**54,493**	**$ 644,546**	**4,198**	**$ 48,289**	**5,848**	**$ 54,282**	**64,539**	**$ 747,117**

Distribution of Annuitant Monthly Benefit by Status and Age
Hazardous Retirees and Beneficiaries
(Dollar amounts expressed in thousands)

	Retirement		Disability		Survivors & Beneficiaries		Total	
Current Age (1)	Number of Annuitants (2)	Total Annual Benefit Amount (3)	Number of Annuitants (4)	Total Annual Benefit Amount (5)	Number of Annuitants (6)	Total Annual Benefit Amount (7)	Number of Annuitants (8)	Total Annual Benefit Amount (9)
Under 50	962	$ 31,981	154	$ 2,738	277	$ 2,447	1,393	$ 37,166
50 - 54	1,258	41,379	98	1,840	79	1,142	1,435	44,361
55 - 59	1,414	43,117	111	1,890	107	1,857	1,632	46,864
60 - 64	1,390	36,870	85	1,330	149	2,395	1,624	40,595
65 - 69	1,466	38,916	73	1,069	166	3,117	1,705	43,102
70 - 74	992	22,480	39	629	156	2,841	1,187	25,950
75 - 79	513	10,526	9	103	116	2,101	638	12,730
80 - 84	206	4,391	4	63	74	1,168	284	5,622
85 - 89	60	1,312	2	16	41	637	103	1,965
90 And Over	14	330	1	20	7	110	22	460
Total	**8,275**	**$ 231,301**	**576**	**$ 9,697**	**1,172**	**$ 17,815**	**10,023**	**$ 258,813**

Non-Hazardous Retired Lives Summary

	Male Lives		Female Lives		Total	
Form of Payment	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Basic	5,941	$ 6,332,648	21,393	$ 16,226,558	27,334	$ 22,559,206
Joint & Survivor:						
100% to Beneficiary	3,497	4,151,226	2,061	1,397,234	5,558	5,548,460
66 2/3% to Beneficiary	885	1,634,848	732	780,592	1,617	2,415,440
50% to Beneficiary	1,230	2,014,604	1,836	2,130,969	3,066	4,145,572
Pop-up Option	4,385	7,055,704	4,174	4,473,551	8,559	11,529,254
Social Security Option:						
Age 62 Basic	249	426,139	548	565,449	797	991,588
Age 62 Survivorship	592	1,055,268	372	376,001	964	1,431,269
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	0	0	0	0
10 Years Certain	0	0	0	0	0	0
10 Years Certain & Life	1,491	1,617,087	3,715	2,916,610	5,206	4,533,697
15 Years Certain & Life	670	709,957	978	754,757	1,648	1,464,714
20 Years Certain & Life	501	711,798	833	619,967	1,334	1,331,765
Refund	0	0	0	0	0	0
Partial Lump Sum Option (PLSO):						
12 Month Basic	87	103,518	353	304,897	440	408,415
24 Month Basic	52	33,276	234	185,902	286	219,178
36 Month Basic	222	111,067	677	311,612	899	422,679
12 Month Survivor	134	166,924	88	88,115	222	255,039
24 Month Survivor	81	83,303	58	36,432	139	119,735
36 Month Survivor	354	235,814	268	124,447	622	360,261
Total:	20,371	$ 26,443,180	38,320	$ 31,293,092	58,691	$ 57,736,272

Hazardous Retired Lives Summary

	Male Lives		Female Lives		Total	
Form of Payment	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Basic	1,198	$ 2,487,926	368	$ 589,402	1,566	$ 3,077,328
Joint & Survivor:						
100% to Beneficiary	1,059	2,305,421	49	65,219	1,108	2,370,640
66 2/3% to Beneficiary	351	891,004	22	54,272	373	945,276
50% to Beneficiary	494	1,214,102	57	124,636	551	1,338,738
Pop-up Option	3,508	9,122,656	163	336,767	3,671	9,459,423
Social Security Option:						
Age 62 Basic	108	165,074	12	10,106	120	175,181
Age 62 Survivorship	296	490,578	20	35,162	316	525,740
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	0	0	0	0
10 Years Certain	103	197,116	3	2,749	106	199,865
10 Years Certain & Life	253	543,960	72	128,682	325	672,642
15 Years Certain & Life	103	200,529	19	34,501	122	235,030
20 Years Certain & Life	176	365,308	30	48,248	206	413,556
Refund	0	0	0	0	0	0
Partial Lump Sum Option (PLSO):						
12 Month Basic	22	35,421	9	12,127	31	47,548
24 Month Basic	19	41,153	6	6,336	25	47,489
36 Month Basic	48	81,699	19	22,651	67	104,350
12 Month Survivor	56	139,805	3	7,738	59	147,544
24 Month Survivor	66	108,868	2	2,248	68	111,117
36 Month Survivor	131	205,458	6	6,249	137	211,707
Total:	7,991	$ 18,596,079	860	$ 1,487,091	8,851	$ 20,083,170

Non-Hazardous Beneficiary Lives Summary

	Male Lives		Female Lives		Total	
Form of Payment	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Basic	20	$ 4,892	45	$ 30,193	65	$ 35,085
Joint & Survivor:						
100% to Beneficiary	514	302,115	1,749	1,258,947	2,263	1,561,062
66 2/3% to Beneficiary	85	51,291	263	214,498	348	265,789
50% to Beneficiary	178	71,708	404	238,917	582	310,624
Pop-up Option	262	230,361	859	914,376	1,121	1,144,737
Social Security Option:						
Age 62 Basic	1	1,291	5	4,806	6	6,097
Age 62 Survivorship	38	26,814	164	202,895	202	229,709
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	88	70,479	109	74,742	197	145,221
10 Years Certain	125	85,774	208	159,909	333	245,683
10 Years Certain & Life	65	50,605	110	97,689	175	148,294
15 Years Certain & Life	42	37,421	84	73,135	126	110,555
20 Years Certain & Life	51	34,523	81	85,618	132	120,141
Refund	0	0	0	0	0	0
Partial Lump Sum Option (PLSO):						
12 Month Basic	0	0	0	0	0	0
24 Month Basic	0	0	0	0	0	0
36 Month Basic	1	149	1	152	2	302
12 Month Survivor	11	9,727	48	49,913	59	59,639
24 Month Survivor	14	16,931	36	32,066	50	48,997
36 Month Survivor	39	20,948	148	70,617	187	91,565
Total:	1,534	$ 1,015,027	4,314	$ 3,508,472	5,848	$ 4,523,499

Hazardous Beneficiary Lives Summary

	Male Lives		Female Lives		Total	
Form of Payment	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Basic	8	$ 4,541	53	$ 41,155	61	$ 45,696
Joint & Survivor:						
100% to Beneficiary	32	22,162	273	353,267	305	375,430
66 2/3% to Beneficiary	3	3,103	57	82,108	60	85,211
50% to Beneficiary	13	9,422	96	92,196	109	101,619
Pop-up Option	40	29,967	329	553,649	369	583,617
Social Security Option:						
Age 62 Basic	0	0	0	0	0	0
Age 62 Survivorship	4	2,058	105	147,779	109	149,837
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	3	2,669	3	2,669
5 Years Certain	3	7,523	3	1,341	6	8,864
10 Years Certain	25	23,221	16	14,500	41	37,721
10 Years Certain & Life	4	2,656	10	7,854	14	10,511
15 Years Certain & Life	4	1,224	5	6,879	9	8,103
20 Years Certain & Life	2	1,080	16	13,638	18	14,718
Refund	0	0	0	0	0	0
Partial Lump Sum Option (PLSO):						
12 Month Basic	0	0	2	2,641	2	2,641
24 Month Basic	0	0	1	1,467	1	1,467
36 Month Basic	2	562	2	1,296	4	1,858
12 Month Survivor	0	0	8	11,652	8	11,652
24 Month Survivor	1	1,295	11	7,457	12	8,752
36 Month Survivor	5	3,219	36	30,995	41	34,213
Total:	146	$ 112,033	1,026	$ 1,372,545	1,172	$ 1,484,578

Schedule of Retirants Added to And Removed from Rolls

(Dollar amounts except average allowance expressed in thousands)

	Added to Rolls	Removed from Rolls	Rolls End of the Year			
Year Ended	Number	Number	Number	Annual Benefits	% Increase in Annual Benefit	Average Annual Benefit
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Non-Hazardous			
2010	2,565	1,283	41,038	$ 452,614		$ 11,029
2011	3,250	1,077	43,211	483,594	6.8%	11,191
2012	3,300	1,207	45,304	515,008	6.5%	11,368
2013	3,570	1,198	47,676	557,979	8.3%	11,704
2014	3,480	1,221	49,935	582,958	4.5%	11,674
2015	4,020	1,304	52,651	617,551	5.9%	11,729
2016	4,409	721	56,339	661,217	7.1%	11,736
2017	4,141	1,467	59,013	667,468	0.9%	11,311
2018	4,650	1,725	61,938	710,374	6.4%	11,469
2019	4,472	1,871	64,539	747,117	5.2%	11,576
			Hazardous			
2010	423	163	6,068	$ 146,917		$ 24,212
2011	502	102	6,468	160,259	9.1%	24,777
2012	483	73	6,878	173,221	8.1%	25,185
2013	519	104	7,293	182,635	5.4%	25,043
2014	469	116	7,646	191,008	4.6%	24,981
2015	526	138	8,034	202,153	5.8%	25,162
2016	604	75	8,563	215,302	6.5%	25,143
2017	576	141	8,998	226,681	5.3%	25,192
2018	779	190	9,587	245,675	8.4%	25,626
2019	608	172	10,023	258,813	5.3%	25,822

SECTION 5

ASSESSMENT AND DISCLOSURE OF RISK

Risks Associated with Measuring the Accrued Liability And Actuarially Determined Contribution

(As Required by ASOP No. 51)

The determination of CERS's accrued liability and actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. The risk measures illustrated in this section are intended to aid stakeholders in understanding the effects of future experience differing from the assumptions used in performing an actuarial valuation. These risk measures may also help with illustrating the potential volatility in the funded status and actuarially determined contributions that result from differences between actual experience and the expected experience based on the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience (economic and demographic) differing from the assumptions, changes in assumptions due to changing conditions, changes in contribution requirements due to modifications to the funding policy, and changes in the liability and cost due to changes in plan provisions or applicable law. The scope of this actuarial valuation does not include any analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the System's future financial condition include:

- Investment risk – actual investment returns may differ from expected returns;
- Longevity risk – members may live longer or shorter than expected and receive pensions for a time period different than assumed;
- Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future contributions differing from expected;
- Salary and payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liabilities or contributions differing from expected;
- Asset/Liability mismatch – changes in assets may be inconsistent with changes in liabilities, thereby altering the relative difference between the assets and liabilities which may alter the funded status and contribution requirements;
- Contribution risk – actual contributions may differ from expected future contributions (for example, actual contributions not being paid in accordance with the System's funding policy, withdrawal liability assessments or other anticipated payments to the plan are not being paid, or material changes occurring in the anticipated number of covered employees, covered payroll, or another relevant contribution base).

Effects of certain experience can generally be anticipated. For example, if investment returns since the most recent actuarial valuation is less (or more) than the assumed rate of return, then the funded status of the plan can be expected to decrease (or increase) more than anticipated.

The contribution rate in this report was established in accordance with applicable Statutes and assumptions adopted by the Board. However, stakeholders should be aware that the scheduled contribution rates specified in State Code do not necessarily guarantee that the contribution requirements will not increase in a future year.

Employer Risk with Contribution Rates

Currently KRS collects contributions from participating employers based on the employer's total payroll of employees who are earning benefits in CERS (i.e. covered payroll). The actuarially determined contribution rate is comprised of two components - the normal cost rate (to pay for the benefits accruing in the next year) and the unfunded amortization (to pay for the benefits accrued by members in previous years). The unfunded amortization is calculated by first determining the dollar amount necessary to pay for the unfunded liability based on KRS's funding policy, and then by dividing that dollar amount by expected covered payroll to convert that contribution requirement to a percentage of payroll (i.e. a contribution rate).

As the contribution requirement, as a percentage of payroll, increases then there is increased incentive for participating employers to make deliberate business action to reduce their payroll reported to the System in order to reduce their pension cost.

Plan Specific Risk Measures

Risks faced by a pension plan evolve over time. A relatively new plan with virtually no assets and paying few benefits will experience lower investment risk than a mature plan with a significant amount of assets and large number of members receiving benefits. There are a few measures that can assist stakeholders in understanding and comparing the maturity of a plan to other systems, which include:

- Ratio of market value of assets to payroll: The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. If assets are approximately the same as covered payroll, an investment return that is 5% different than assumed would equal 5% of payroll. In another example, if the assets are approximately twice as large as covered payroll, an investment return that is 5% different than assumed would equal 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- Ratio of actuarial accrued liability to payroll: The ratio of actuarial accrued liability to payroll can be used as a measure to indicate the potential volatility of contributions due to volatility in the liability experience. For instance, if the actuarial accrued liability is 5 times the size of the covered payroll, then a change in the liability that is 2% different than expected would be a change in magnitude that is 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- Percentage of Expected Contributions Actually Received: This measure identifies the percentage difference between the contributions the fund expects to receive during the fiscal year to and actual contributions received by the fund during the fiscal year. A percentage that is less than 100% means that actual contributions the fund received were less than the expected contributions determined by a prior actuarial valuation. On the other hand, a percentage that is greater than 100% means that actual contributions the fund received were more than the expected contributions.

- Ratio of active to retired members: A relatively mature open plan is likely to have close to the same number of actives to retirees resulting in a ratio that is around 1.0. On the other hand, a super-mature plan, or a plan that is closed to new entrants will have more retirees than active members resulting in a ratio below 1.0. As this ratio declines, a larger portion of the total actuarial accrued liability in the System is attributable to retirees. This metric also typically moves in tandem with the liability to payroll metric, which provides an indication of potential contribution volatility.

The following tables provide a summary of these measures for CERS Non-Hazardous and Hazardous Funds for the current year and the prior four years so stakeholders can identify how these measures are trending. While ASOP No. 51 requires this disclosure with respect to only the retirement funds, we have included this information for the insurance funds for completeness.

CERS Non-Hazardous

	Retirement Fund					Insurance Fund				
	June 30,					June 30,				
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015
Ratio of the market value of assets to total payroll	2.84	2.85	2.73	2.60	2.79	1.02	0.98	0.90	0.83	0.85
Ratio of actuarial accrued liability to payroll	5.69	5.35	5.22	4.71	4.68	1.41	1.25	1.37	1.27	1.27
Ratio of net cash flow to market value of assets	-3.5%	-3.4%	-3.5%	-4.4%	-3.1%	0.7%	0.0%	0.1%	-0.2%	0.6%
Percentage of Expected Contribution Actually Received	72% [1]	96%	97%	95%	98%	87% [1]	101%	97%	92%	91%
Ratio of actives to retirees and beneficiaries	1.26	1.32	1.39	1.43	1.54					

[1] Expected contribution for FYE2019 based on the actuarially determined contribution rate of 28.05% from the June 30, 2017 valuation and expected compensation based on census data from the June 30, 2018 valuation

CERS Hazardous

	Retirement Fund					Insurance Fund				
	June 30,					June 30,				
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015
Ratio of the market value of assets to total payroll	4.32	4.40	4.10	4.07	4.29	2.40	2.40	2.20	2.16	2.19
Ratio of actuarial accrued liability to payroll	9.38	8.98	8.58	7.52	7.47	3.10	3.16	3.30	3.16	3.11
Ratio of net cash flow to market value of assets	-2.8%	-2.6%	-2.5%	-3.0%	-2.3%	-1.0%	-1.4%	-1.5%	0.0%	0.7%
Percentage of Expected Contribution Actually Received	71% [1]	100%	103%	102%	104%	92% [1]	104%	101%	98%	95%
Ratio of actives to retirees and beneficiaries	0.95	0.97	1.06	1.06	1.14					

[1] Expected contribution for FYE2019 based on the actuarially determined contribution rate of 47.86% from the June 30, 2017 valuation and expected compensation based on census data from the June 30, 2018 valuation

APPENDIX A

ACTUARIAL ASSUMPTIONS AND METHODS

Summary of Actuarial Methods and Assumptions

The following presents a summary of the actuarial assumptions and methods used in the valuation of the County Employees Retirement System.

In general, the assumptions and methods used in the valuation are based on the actuarial experience study for the five-year period ending June 30, 2018 and adopted by the Board in April 2019.

Investment return rate:

Assumed annual rate of 6.25% net of investment expenses for the retirement funds and the insurance funds

Price Inflation:

Assumed annual rate of 2.30%

Payroll Growth Assumption (used for amortization of unfunded accrued liabilities):

Assumed annual rate of 2.00%

Rates of Annual Salary Increase:

Assumed rates of annual salary increases are shown below.

Service Years	Annual Rates of Salary Increase					
	Merit & seniority		Price Inflation & Productivity		Total Increase	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous
0	7.00%	15.50%	3.30%	3.55%	10.30%	19.05%
1	4.00%	4.00%	3.30%	3.55%	7.30%	7.55%
2	3.00%	2.00%	3.30%	3.55%	6.30%	5.55%
3	1.50%	1.25%	3.30%	3.55%	4.80%	4.80%
4	1.25%	1.00%	3.30%	3.55%	4.55%	4.55%
5	1.25%	1.00%	3.30%	3.55%	4.55%	4.55%
6	1.00%	1.00%	3.30%	3.55%	4.30%	4.55%
7	1.00%	0.50%	3.30%	3.55%	4.30%	4.05%
8	0.75%	0.50%	3.30%	3.55%	4.05%	4.05%
9	0.75%	0.00%	3.30%	3.55%	4.05%	3.55%
10	0.50%	0.00%	3.30%	3.55%	3.80%	3.55%
11	0.50%	0.00%	3.30%	3.55%	3.80%	3.55%
12	0.25%	0.00%	3.30%	3.55%	3.55%	3.55%
13	0.25%	0.00%	3.30%	3.55%	3.55%	3.55%
14	0.25%	0.00%	3.30%	3.55%	3.55%	3.55%
15 & Over	0.00%	0.00%	3.30%	3.55%	3.30%	3.55%

Retirement rates:

Assumed annual rates of retirement are shown below. Rates are only applicable for members who are eligible for a service retirement.

	Non-Hazardous					Hazardous		
	Normal Retirement		Early Retirement[1]			Members participating before 9/1/2008[2]	Members participating between 9/1/2008 and 1/1/2014[3]	Members participating after 1/1/2014[3]
Age	Male	Female	Male	Female	Service			
Under 45	35.0%	27.0%			5	17.0%		
45	35.0%	27.0%			6	17.0%		
46	35.0%	27.0%			7	17.0%		
47	35.0%	27.0%			8	17.0%		
48	35.0%	27.0%			9	17.0%		
49	35.0%	27.0%			10	17.0%		
50	30.0%	27.0%			11	17.0%		
51	30.0%	27.0%			12	17.0%		
52	30.0%	27.0%			13	17.0%		
53	30.0%	27.0%			14	17.0%		
54	30.0%	27.0%			15	17.0%		
55	30.0%	27.0%	4.0%	5.0%	16	17.0%		
56	30.0%	27.0%	4.0%	5.0%	17	17.0%		
57	30.0%	27.0%	4.0%	5.0%	18	17.0%		
58	30.0%	27.0%	4.0%	5.0%	19	17.0%		
59	30.0%	27.0%	4.0%	5.0%	20	30.0%		
60	30.0%	27.0%	4.0%	8.0%	21	22.5%		
61	30.0%	27.0%	4.0%	9.0%	22	18.0%		
62	30.0%	40.0%	15.0%	20.0%	23	21.0%		
63	30.0%	35.0%	15.0%	18.0%	24	24.0%		
64	30.0%	30.0%	15.0%	16.0%	25	27.0%	21.6%	16.0%
65	30.0%	30.0%			26	30.0%	24.0%	16.0%
66	30.0%	27.0%			27	33.0%	26.4%	16.0%
67	30.0%	27.0%			28	36.0%	28.8%	16.0%
68	30.0%	27.0%			29	39.0%	31.2%	16.0%
69	30.0%	27.0%			30+	39.0%	31.2%	100.0%
70	30.0%	27.0%						
71	30.0%	27.0%						
72	30.0%	27.0%						
73	30.0%	27.0%						
74	30.0%	27.0%						
75	100.0%	100.0%						

[1] *The annual rate of retirement is 11% for male members and 12% for female members with 25-26 years of service.*

[2] *The annual rate of retirement is 100% at age 62.*

[3] *The annual rate of retirement is 100% at age 60.*

Non-Hazardous System: For members hired after 7/1/2003, the rates shown above are multiplied by 80% if he member is under age 65 to reflect the different retiree health insurance benefit.

Hazardous System: For members hired after 7/1/2003 and prior to 9/1/2008, the rates shown above are multiplied by 80% if the member is under age 62 to reflect the different retiree health insurance benefit.

Disability rates:

An abbreviated table with assumed rates of disability is show below.

	Non-Hazardous		Hazardous	
Age	**Male**	**Female**	**Male**	**Female**
20	0.04%	0.04%	0.07%	0.07%
30	0.06%	0.06%	0.12%	0.12%
40	0.14%	0.14%	0.26%	0.26%
50	0.39%	0.39%	0.73%	0.73%
60	1.02%	1.02%	1.90%	1.90%

Withdrawal rates (for causes other than disability and retirement):

Assumed annual rates of withdrawal are shown below and include pre-retirement mortality rates as described on the next page.

Service Years	Annual Rates of Withdrawal	
	Non-Hazardous	**Hazardous**
1	20.00%	20.00%
2	15.58%	9.11%
3	12.48%	7.24%
4	10.66%	6.14%
5	9.37%	5.37%
6	8.37%	4.76%
7	7.56%	4.27%
8	6.87%	3.85%
9	6.27%	3.49%
10	5.74%	3.18%
11	5.27%	2.89%
12	4.84%	2.63%
13	4.45%	2.40%
14	4.09%	2.18%
15	3.76%	1.98%
16	3.45%	1.80%
17	3.16%	1.62%
18	2.89%	1.46%
19	2.64%	1.30%
20	2.39%	1.16%
21	2.16%	0.00%
22	1.94%	0.00%
23	1.74%	0.00%
24	1.54%	0.00%
25	1.35%	0.00%
26 & Over	0.00%	0.00%

Mortality Assumption:

Pre-retirement mortality: PUB-2010 General Mortality table, for the Non-Hazardous System, and the PUB-2010 Public Safety Mortality table for the Hazardous System, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010.

Post-retirement mortality (non-disabled): System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2019.

The following table provides the life expectancy for a non-disabled retiree in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years					
Gender	**Year of Retirement**				
	2020	**2025**	**2030**	**2035**	**2040**
Male	21.0	21.4	21.8	22.2	22.6
Female	24.0	24.4	24.8	25.2	25.6

Post-retirement mortality (disabled): PUB-2010 Disabled Mortality table, with a 4-year set-forward for both male and female rates, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010.

Marital status:

100% of employees are assumed to be married, with the female spouse 3 years younger than the male spouse.

Line of Duty Disability

Non-Hazardous: 2% of disabilities are assumed to occur in the line of duty

Hazardous: 50% of disabilities are assumed to occur in the line of duty

Line of Duty Death

25% of deaths are assumed to occur in the line of duty

Dependent Children:

For members in the Hazardous Plan who receive a duty-related death or disability benefit, the member is assumed to be survived by two dependent children, each age 6 with payments for 15 years.

Form of Payment:

Members are assumed to elect a life-only annuity at retirement.

Actuarial Cost Method:

Entry Age Normal, Level Percentage of Pay. The Entry Age Normal actuarial cost method allocates the System's actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level percent of pay necessary to fully fund the expected benefits to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

Health Care Age Related Morbidity/Claims Utilization:

To model the impact of aging on the underlying health care costs for Medicare retirees, the valuation relied on the Society of Actuaries' 2013 Study "Health Care Costs – From Birth to Death". Table 4 (Development of Plan Specific Medicare Age Curve) was used to model the impact of aging for ages 65 and over.

Health Care Cost Trend Rates[1]:

January 1	Non-Medicare Plans	Medicare Plans	Dollar Contribution[2]
2021	6.25%	5.50%	1.50%
2022	6.25%	5.40%	1.50%
2023	6.25%	5.30%	1.50%
2024	6.00%	5.20%	1.50%
2025	5.80%	5.10%	1.50%
2026	5.60%	5.00%	1.50%
2027	5.40%	4.90%	1.50%
2028	5.20%	4.80%	1.50%
2029	5.00%	4.70%	1.50%
2030	4.80%	4.60%	1.50%
2031	4.60%	4.50%	1.50%
2032	4.40%	4.40%	1.50%
2033	4.20%	4.30%	1.50%
2034	4.05%	4.20%	1.50%
2035 & Beyond	4.05%	4.05%	1.50%

[1] All increases are assumed to occur on January 1. The 2020 premiums were known at the time of the valuation and were incorporated into the liability measurement.
[2] Applies to members participating on or after July 1, 2003

Health care trend assumptions are based on the model issued by the Society of Actuaries "Getzen model of Long-Run Medical Cost Trends for the SOA; Thomas E. Getzen, iHEA and Temple University 2014 © Society of Actuaries.

The underlying assumptions used to develop the health care trend rates include:

- A short run period-this is a period for which anticipated health care trend rates are manually set based on local information as well as plan-specific and carrier information.
- Long term real GDP growth – 1.75%
- Long term rate of inflation – 2.30%
- Long term nominal GDP growth – 4.05%
- Year that excess rate converges to 0 – 2035

Health care trend rates are thus the manually set rates for the short run period and rates which decline to an ultimate trend rate which equals the assumed nominal long term GDP growth rate.

Health Care Participation Assumptions:

- Active members are assumed to elect health coverage at retirement at the following participation rates.

Service at Retirement	Members participating before 7/1/2003*	Members participating after 7/1/2003
Under 10	50%	100%
10-14	75%	100%
15-19	90%	100%
Over 20	100%	100%

* 100% of members with a duty disability or a duty death (in service) benefit are assumed to elect coverage at retirement.

- Future retirees are assumed to have a similar distribution by plan type as the current retirees.

Medicare Plan	Participation Percentage
Medical Only	7%
Essential	8%
Premium	85%

Non-Medicare Plan	Participation Percentage
LivingWell Limited	2%
LivingWell Basic	13%
LivingWell CDHP	27%
LivingWell PPO	58%

Health Care Participation Assumptions (continued):

- 50% of deferred vested members participating before July 1, 2003 are assumed to elect health coverage at retirement. 100% of deferred vested members participating after July 1, 2003 are assumed to elect health coverage at retirement.

- Deferred vested members receiving insurance benefits from the non-hazardous fund are assumed to begin health coverage at age 55 for members participating before September 1, 2008, at age 60 for members participating on or after September 1, 2008 but before January 1, 2014, and at age 65 for members participating on or after January 1, 2014.

- Deferred vested members receiving insurance benefits from the hazardous fund are assumed to begin health coverage at age 50 for members participating before January 1, 2014 and at age 60 for members participating on or after January 1, 2014.

- 75% of future retirees, with hazardous service, are assumed to elect spouse health care coverage. No dependent coverage is assumed for members who only have non-hazardous service. 100% of spouses with health care coverage are assumed to continue coverage after the member's death.

Excise ("Cadillac") Tax:

For taxable years beginning after December 31, 2021, a 40% excise tax will be required to be paid (by the employer and/or insurer) on the aggregate cost of the health plan in excess of certain legislated thresholds. For 2018, the thresholds are $850 per month for individual coverage and $2,292 per month for family coverage.

Both Actuarial Standard of Practice No. 6 and GASB Statement Nos. 74 and 75 reference this tax, and, in accordance with these standards an estimate of the impact of the Cadillac tax has been included in this valuation.

Assumptions and methods used to determine the impact of the Cadillac Tax include:

- 2018 thresholds of $850/$2,292 were indexed annually by 2.30%.
- Premium data submitted was not adjusted for permissible exclusions to the Cadillac Tax.
- There were no special adjustments to the dollar limit other than those permissible for non-Medicare retirees over 55.

In this valuation, the impact of the Cadillac Tax has been calculated by increasing the employer paid premiums for Non-Medicare retirees, who became participants before July 1, 2003, by 0.9%. Non-Medicare retirees who became participants after July 1, 2003 receive dollar subsidies per year of service, which are not expected to exceed the overall Non-Medicare premiums. As a result, the costs attributable to the Cadillac Tax for members who became participants after July 1, 2003 will be paid by the retirees.

Other Assumptions

1. Valuation payroll (used for determining the amortization contribution rate): Current fiscal year payroll.
2. Individual salaries used to project benefits: For salary amounts prior to the valuation date, the salary from the last fiscal year is projected backward with the valuation salary scale assumption. For future salaries, the salary from the last fiscal year is projected forward with one year's salary scale.
3. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported salaries represent amounts paid to members during the year ending on the valuation date.
4. Current active members that terminate employment (for reasons other than retirement, disability, or death) are assumed to commence their retirement benefits at first unreduced retirement eligibility. Members are assumed to elect a refund of member contributions if the value of their account balance exceeds the present value of the deferred benefit. Members participating in the Cash Balance plan are assumed to elect to receive a lump sum of their cash balance account if their account balance exceeds the present value of the deferred benefit and the member is not eligible for insurance benefits at termination.
5. The beneficiaries of current active members that die while active are assumed to commence their survivor benefits at the member's first unreduced retirement eligibility. Beneficiaries are assumed to elect a refund of member contributions if the value of the member's account balance exceeds the present value of the survivor benefit. Beneficiaries of active members that die while in the line of duty are assumed to commence their survivor benefits immediately at the death of the member.
6. There will be no recoveries once disabled.
7. Cash Balance Provisions: The cash balance interest crediting rate while a member is an active employee is assumed to equal 5.6875% (based upon the 6.25% assumed investment return). The interest crediting rate after a member terminates employment is 4%.
8. Decrement timing: Decrements of all types are assumed to occur mid-year. Decrement rates are used as described in this report, without adjustment for multiple decrement table effects.
9. Service: All members are assumed to accrue 1 year of benefit and eligibility service each year.
10. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
11. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

12. Current Inactive Population (Retirement Fund): All non-vested members are assumed to take an immediate refund of member contributions. Vested members are assumed to elect an immediate refund of member contributions at the valuation date if the value of their account balance exceeds the present value of their deferred benefit. Non-hazardous members are assumed to retire at age 65. Hazardous members hired prior to September 1, 2008 are assumed to retire at age 55 and hazardous members hired on or after September 1, 2008 are assumed to retire at age 60.

Participant Data

Participant data was supplied in electronic text files. There were separate files for (i) active and inactive members, and (ii) members and beneficiaries receiving benefits.

The data for active and terminated members included date of birth, gender, date of participation, benefit tier indicator, service with the current system, total vesting service, salary, employee contribution account balances, and employer pay credits for members participating in the cash balance plan. For retired members and beneficiaries, the data included date of birth, gender, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and form of payment code.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

Changes in assumptions since the prior valuation:

- Annual salary increases were updated based on the 2018 Experience Study
- Annual rates of retirement, disability, withdrawal, and mortality were updated based on the 2018 Experience Study
- The percent of disabilities assumed to occur in the line of duty was updated from 0% to 2% for non-hazardous members and 50% for hazardous members
- The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.
- The assumed impact of the Cadillac Tax was changed from a 3.6% to a 0.9% load on employer paid premiums for Non-Medicare retirees who became participants prior to July 1, 2003.

Development of Baseline Claims Cost

For non-Medicare retirees, the initial per capita costs were based on the plan premiums effective January 1, 2020, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. The spouse/dependent premium of $870.41 for non-Medicare retirees is based on a blending of Family and Couple premiums for the current retirees that have over 4 years of hazardous service. The fully-insured premiums KRS pays the Kentucky Employees' Health Plan (KEHP) are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit rate subsidy for the non-Medicare eligible retirees. Actuarial Standard of Practice No. 6 (ASOP No. 6) requires aging subsidies (or implicit rate subsidies) to be recognized. However, the KRS health insurance trusts are only used to reimburse KEHP for the employer's portion of the blended premiums. Said another way, the trusts are not used to fund the difference between the underlying retiree claims and the blended KEHP premiums. As a result, the retiree health care liabilities developed in this report for the non-Medicare retirees are based solely on the premiums charged by KEHP, without any age-adjustment. GASB Statements No. 74 and No. 75 prohibit such a deviation from ASOP No. 6. The liabilities developed in this report are solely for the purpose of funding the benefits paid by the health insurance funds and are not appropriate for financial statement disclosures required by GASB. GRS provides separate GASB reports to KRS which include the liabilities associated with the implicit rate subsidy.

FOR THOSE NOT ELIGIBLE FOR MEDICARE		
AGE	MEMBER	SPOUSE/DEPENDENTS
<65	$728.75	$870.41

For Medicare retirees, the initial per capita costs were estimated based on the plan premiums effective January 1, 2020, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. Age graded and sex distinct premiums are utilized for retirees over the age of 65. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

FOR THOSE ELIGIBLE FOR MEDICARE		
AGE	MALE	FEMALE
65	$207.21	$195.44
75	242.43	236.56
85	256.36	259.38

Appendix B of the report provides a full schedule of premiums.

Mehdi Riazi is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Mehdi Riazi

Mehdi Riazi, FSA, EA, MAAA

APPENDIX B

BENEFIT PROVISIONS

Summary of Benefit Provisions for County Employees Retirement System (CERS)

CERS Non-Hazardous Employees

Retirement: Tier 1, Participation before 9/1/2008

Normal Retirement Eligibility	Age 65 with at least 1 month of service credit; or Any age with at least 27 years of service
Benefit Amount	If a member has at least 48 months of service, the monthly benefit is 2.00% times final average compensation times years of service. For members who began participating prior to 8/1/2004, the monthly benefit is 2.20% times final average compensation times years of service. 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. Final average compensation is based on the member's highest 5 years of compensation.
Early Retirement Eligibility	Any age (prior to age 65) with at least 25 years of service; or Age 55 with at least 5 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement eligibility precedes the member's normal retirement date.

CERS Non-Hazardous Employees (continued)

Retirement: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Normal Retirement Eligibility	Age 65 with at least 5 years of service; or Rule of 87 (Age 57 or older if age plus service equals 87)
Benefit Amount	The monthly benefit is equal to the applicable benefit multiplier times final average compensation times years of service.

Years of Service	Benefit Multiplier
10 or less	1.10%
10-20	1.30%
20-26	1.50%
26-30	1.75%
Greater than 30*	2.00%

* The 2.00% benefit multiplier only applies to service credit in excess of 30 years. If a member has greater than 30 years of service at retirement, service prior to 30 years will be multiplied by the 1.75% benefit multiplier.

Final compensation is based on the member's last 5 years of compensation.

Early Retirement Eligibility	Age 60 with at least 10 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement date precedes the member's normal retirement eligibility.

Retirement: Tier 3, Participation on or after 1/1/2014

Normal Retirement Eligibility	Age 65 with at least 5 years of service; or Rule of 87 (Age 57 or older if age plus service equals 87)
Benefit Amount	Each year that the member is active, a 4.00% employer pay credit and the employee's 5.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. 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 in that year 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. At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.
Early Retirement Eligibility	N/A

CERS Non-Hazardous Employees (continued)

Deferred Vested Benefit: Tier 1, Participation before 9/1/2008

Eligibility	At least 1 month of service credit
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Eligibility	5 years of service
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit Tier 3, Participation on or after 1/1/2014

Eligibility	5 years of service
Benefit Amount	At termination of employment, members may choose to leave their account balance with the System and retire once they are eligible. The hypothetical account balance will earn 4% annual interest after termination. Members may also choose to withdrawal their entire accumulated balance. If a member does not have 5 years of service at termination, the member is eligible to receive a partial refund of their account balance. This refund includes the member’s contributions with interest.

Disability Retirement: Participation before 8/1/2004

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	Disability benefits are calculated in the same manner as the normal retirement benefit with years of service and final compensation being determined as of the date of disability, except that service credit shall be added to the person’s total service beginning with the last date of paid employment and continuing to the member’s 65th birthday, with total service not exceeding 25 years. Total service credit added shall not be greater than the member’s actual service at disability. For members with at least 25 years of service on the last day of paid employment but less than 27 years of service, total service shall be 27 years. For members with 27 or more years of service credit, actual service will be used.

CERS Non-Hazardous Employees (continued)

Disability Retirement: Participation on or after 8/1/2004 but before 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 20% of the member's final monthly rate of pay or the member's normal retirement benefit (without reduction for early retirement) with years and final compensation being determined as of the date of disability.

Disability Retirement: Participation on or after 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 20% of the member's final monthly rate of pay or the member's retirement benefit calculated at the member's normal retirement date.

Line of Duty Disability Benefit

Disability Benefit	If the disability is a direct result of an act in the line of duty, the benefit shall not be less than 25% of the member's final monthly rate of pay. Additionally, each eligible dependent child will receive 10% of the member's monthly final rate of pay up to a maximum of 40%.

Pre-Retirement Death Benefit

Eligibility	Eligible for early or normal retirement; or Under age 65 with at least 60 months of service and actively working at the time of death; or At least 144 months of service, if no longer actively working
Spouse Benefit	The member's retirement benefit calculated in the same manner as if the member had retired on the day of the member's death and elected a 100% joint and survivor benefit. The benefit is actuarially reduced if the member dies prior to their normal retirement age.

Pre-Retirement Death Benefit (Death in the Line of Duty)

Eligibility	One month of service credit
Spouse Benefit	A $10,000 lump sum payment plus a monthly payment of 75% of the deceased member's final monthly average pay. Each dependent child will receive 10% of the final monthly average pay (not to exceed a total child benefit of 25% while the spouse is alive). A spouse may also elect the non-line of duty death benefit.
Child Benefit	In the event there is no surviving spouse, the benefit is 50% of final monthly average pay for one child, 65% of final monthly average pay for two children, or 75% of final monthly average pay for three or more eligible children.

CERS Non-Hazardous Employees (continued)

Post-Retirement Death Benefit

Eligibility	48 months of service, and in receipt of retirement benefits
Death Benefit	A $5,000 lump sum payment

Member Contributions

Tier 1, Participation before 9/1/2008	5% of creditable compensation. Members who do not receive a retirement benefit are entitled to a full refund of contributions with interest. The annual interest rate is set by the KRS board, not less than 2.0%.
Tier 2, Participation on or after 9/1/2008 but before 1/1/2014	5% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest. The annual interest rate is 2.5%.
Tier 3, Participation after 1/1/2014	5% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest.

Changes since the Prior Valuation

There have been no changes to benefit provisions since the prior valuation.

CERS Hazardous Employees

Retirement: Tier 1, Participation before 9/1/2008

Normal Retirement Eligibility	Age 55 with at least 1 month of service credit; or Any age with at least 20 years of service
Benefit Amount	If a member has at least 60 months of service, the monthly benefit is 2.50% times final average compensation times years of service. 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. Final average compensation is based on the member's highest 3 years of compensation.
Early Retirement Eligibility	Age 50 with at least 15 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement date precedes the member's normal retirement eligibility.

CERS Hazardous Employees (continued)

Retirement: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Normal Retirement Eligibility	Age 60 with at least 5 years of service; or Any age with at least 25 years of service
Benefit Amount	The monthly benefit is equal to the applicable benefit multiplier times final average compensation times years of service.

Years of Service	Benefit Multiplier
10 or less	1.30%
10-20	1.50%
20-25	2.25%
Greater than 25	2.50%

Final average compensation is based on the member's highest 3 years of compensation.

Early Retirement Eligibility	Age 50 with at least 15 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement date precedes the member's normal retirement eligibility.

Retirement: Tier 3, Participation on or after 1/1/2014

Normal Retirement Eligibility	Age 60 with at least 5 years of service; or Any age with at least 25 years of service
Benefit Amount	Each year that the member is active, a 7.50% employer pay credit and the employee's 8.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. 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 in that year 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. At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.
Early Retirement Eligibility	N/A

CERS Hazardous Employees (continued)

Deferred Vested Benefit: Tier 1, Participation before 9/1/2008

Eligibility	At least 1 month of service credit
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Eligibility	5 years of service
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit Tier 3, Participation on or after 1/1/2014

Eligibility	5 years of service
Benefit Amount	At termination of employment, members may choose to leave their account balance with the System and retire once they are eligible. The hypothetical account balance will earn 4% annual interest after termination. Members may also choose to withdrawal their entire accumulated balance. If a member does not have 5 years of service at termination, the member is eligible to receive a partial refund of their account balance. This refund includes the member's contributions with interest.

Disability Retirement: Participation before 8/1/2004

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	Disability benefits are calculated in the same manner as the normal retirement benefit with years of service and final compensation being determined as of the date of disability, except that if the member has less than 20 years of service at disability, service credit shall be added to the person's total service beginning with the last date of paid employment and continuing to the member's 55th birthday, with total service not exceeding 20 years. Total service credit added shall not be greater than the member's actual service at disability.

CERS Hazardous Employees (continued)

Disability Retirement: Participation on or after 8/1/2004 but before 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 25% of the member's final monthly rate of pay or the member's normal retirement benefit (without reduction for early retirement) with years and final compensation being determined as of the date of disability.

Disability Retirement: Participation on or after 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 25% of the member's final monthly rate of pay or the member's retirement benefit calculated at the member's normal retirement date.

Line of Duty Disability Benefit

Disability Benefit	If the disability is a direct result of an act in the line of duty, the benefit shall not be less than 25% of the member's final monthly rate of pay. Additionally, each eligible dependent child will receive 10% of the member's monthly final rate of pay up to a maximum of 40%.

Pre-Retirement Death Benefit

Eligibility	Eligible for early or normal retirement; or Under age 55 with at least 60 months of service and actively working at the time of death; or At least 144 months of service, if no longer actively working
Spouse Benefit	The member's retirement benefit calculated in the same manner as if the member had retired on the day of the member's death and elected a 100% joint and survivor benefit. The benefit is actuarially reduced if the member dies prior to their normal retirement age.

Pre-Retirement Death Benefit (Death in the Line of Duty)

Eligibility	One month of service credit
Spouse Benefit	A $10,000 lump sum payment plus a monthly payment of 75% of the deceased member's final monthly average pay. Each dependent child will receive 10% of the final monthly average pay (not to exceed a total child benefit of 25% while the spouse is alive). A spouse may also elect the non-line of duty death benefit.
Non-Spouse Benefit	If the beneficiary is only one person who is a dependent receiving at least 50% of his or her support from the member, the beneficiary may elect a lump sum payment of$10,000.
Child Benefit	In the event there is no surviving spouse, the benefit is 50% of final monthly average pay for one child, 65% of final average pay for two children, or 75% of final average pay for three or more eligible children.

CERS Hazardous Employees (continued)

Post-Retirement Death Benefit

Eligibility	48 months of service, and in receipt of retirement benefits
Death Benefit	A $5,000 lump sum payment

Member Contributions

Tier 1, Participation before 9/1/2008	8% of creditable compensation. Members who do not receive a retirement benefit are entitled to a full refund of contributions with interest. The annual interest rate is set by the KRS board, not less than 2.0%.
Tier 2, Participation on or after 9/1/2008 but before 1/1/2014	8% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest. The annual interest rate is 2.5%.
Tier 3, Participation after 1/1/2014	8% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest.

Changes since the Prior Valuation

There have been no changes in benefit provisions since the prior actuarial valuation.

Summary of Main Retiree Insurance Benefit Provisions

Insurance Tier 1: Participation began before 7/1/2003

Benefit Eligibility	Recipient of a retirement allowance

Benefit Amount

Non-Hazardous Service	Percentage of Member Premium Paid by Retirement System	Hazardous Service	Percentage of Member & Dependent Premium Paid by Retirement System
Less than 4 years	0%	Less than 4 years	0%
4 – 9 years	25%	4 – 9 years	25%
10 – 14 years	50%	10 – 14 years	50%
15 – 19 years	75%	15 – 19 years	75%
20 or more years	100%	20 or more years	100%

The percentage paid by the retirement system is applied to the 'contribution' plan selected by the KRS Board.

Duty Disability Retirement	If disability was a result of injuries sustained while in the line of duty, the member receives 100% of the maximum contribution for the member and dependents. This benefit is provided to members in the Non-hazardous and Hazardous plans alike.
Duty Death in Service	If an active employee's death was a result of injuries sustained while in the line of duty, the member's spouse and children receive a fully subsidized health insurance benefit. This benefit is provided to members in the Non-hazardous and Hazardous plans alike.
Non-Duty Death in Service	If the surviving spouses is in receipt of a pension allowance, he or she is eligible for continued health coverage. The percentage of the premium paid for by the retirement system is based on the member's years of hazardous service at the time of death.
Surviving Spouse of a Retiree	A surviving spouse of a retiree, who is in receipt of a pension allowance, will receive a premium subsidy based on the member's years of hazardous service.
Hazardous employees who retired prior to August 1, 1998	System's contribution for spouse and dependents is based on total service.

Insurance Tier 2: Participation began on or after 7/1/2003, but before 9/1/2008

Benefit Eligibility	Recipient of a retirement allowance with at least 120 months of service at retirement
Non-Hazardous Subsidy	Monthly contribution of $10 for each year of earned service. The monthly contribution is increased by 1.5% each July 1. As of July 1, 2019, the Non-Hazardous monthly contribution was $13.58/year of service. Upon the retiree's death, the surviving spouse may continue coverage (if in receipt of a retirement allowance) but will be 100% responsible for the premiums.
Hazardous Subsidy	Monthly contribution of $15 for each year of earned hazardous service. The monthly contribution is increased by 1.5% each July 1. As of July 1, 2019, the Hazardous monthly contribution was $20.37/year of service. Upon the retiree's death, the surviving spouse of a hazardous duty member will receive a monthly contribution of $10 ($13.58 as of July 1, 2019) for each year of hazardous service.
Duty Disability Retirement	If disability was a result of injuries sustained while in the line of duty, the member receives a benefit equal to at least 20 times the Non-Hazardous monthly contribution. This benefit is provided to members in the Non-Hazardous and Hazardous plans alike.
Duty Death in Service	If an active employee's death was a result of injuries sustained while in the line of duty, the member's spouse and children receive a fully subsidized health insurance benefit. This benefit is provided to members in the Non-hazardous and Hazardous plans alike.
Non-Duty Death in Service	If the surviving spouse is in receipt of a pension allowance, he or she is eligible for continued health coverage. The percentage of the premium paid for by the retirement system is based on the member's years of hazardous service at the time of death.

Insurance Tier 3: Participation began on or after 9/1/2008

Tier 3 insurance benefits are identical to Tier 2, except Tier 3 members are required to have at least 180 months of service in order to be eligible.

Monthly Health Plan Premiums – Effective January 1, 2020

	Non-Medicare Plan Options				
Plan Option	**Single**	**Parent Plus**	**Couple**	**Family**	**Family X-Ref**
LivingWell PPO*	$731.82	$1,044.12	$1,604.96	$1,787.46	$881.40
LivingWell CDHP	710.94	982.30	1,342.78	1,500.50	821.36
LivingWell Basic	683.58	942.52	1,457.82	1,624.66	801.82
Living Well Limited	608.24	866.76	1,334.18	1,485.46	731.68

Medicare Plan Options	
Kentucky Retirement Systems - Medical Only Plan	$176.26
Kentucky Retirement Systems – Medicare Advantage/Essential Plan	63.15
Kentucky Retirement Systems – Medicare Advantage/Premium Plan*	250.75

*For 2020, the contribution plans selected by the KRS Board were the LivingWell PPO plan option for non-Medicare retirees and the Medicare Advantage Premium plan option for Medicare retirees.

Dollar Contribution Amount for Insurance Tier 2 and Tier 3

Monthly contribution amounts per year of service as of July 1, 2019.

Non-Hazardous Service	Hazardous Service
$13.58	$20.37

Changes since the Prior Valuation

There have been no changes in benefit provisions since the prior actuarial valuation.

APPENDIX C

GLOSSARY

Glossary

Actuarial Accrued Liability (AAL): That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

Actuarial Assumptions: Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

Actuarial Cost Method or ***Funding Method:*** A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ADC.

Actuarial Gain or ***Actuarial Loss:*** A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)

b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and

c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, non-retired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations that provide the financial information of the plan, such as the funded ratio, unfunded actuarial accrued liability and the ADC.

Actuarial Value of Assets or ***Valuation Assets:*** The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.

Actuarially Determined: Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Actuarially Determined Contribution (ADC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and the Amortization Payment.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

Amortization Payment: The portion of the pension plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Closed Amortization Period: A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: A retirement plan that is not a Defined Contribution Plan. Typically a defined benefit plan is one in which benefits are defined by a formula applied to the member's compensation and/or years of service.

Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Experience Study: A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.

Funding Period or ***Amortization Period:*** The term "Funding Period" is used two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ADC. This funding period specified in State statute. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on a statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: Governmental Accounting Standards Board.

GASB 67 and ***GASB 68***: Governmental Accounting Standards Board Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting and reporting rules for public retirement systems and the employers that sponsor, participate in, or contribute to them. Statement No. 67 sets the accounting rules for the financial reporting of the retirement systems, while Statement No. 68 sets the rules for the employers that sponsor, participate in, or contribute to public retirement systems.

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded

Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but may not decrease by exactly one year in the subsequent year's actuarial valuation. For instance, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year.

Unfunded Actuarial Accrued Liability: The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Valuation Date or Actuarial Valuation Date: The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

State Police Retirement System (SPRS)

Actuarial Valuation Report
as of June 30, 2019

GRS Retirement Consulting

P: 469.524.0000 | F: 469.524.0003 | www.grsconsulting.com

November 6, 2019

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

Subject: Actuarial Valuation as of June 30, 2019

Dear Trustees of the Board:

This report describes the current actuarial condition of the State Police Retirement System (SPRS), provides the actuarially determined employer contribution rates for fiscal years ending June 30, 2021 and June 30, 2022, and analyzes changes in the System's financial condition. In addition, the report provides various summaries of the data.

Separate reports are issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statements 67, 68, 74 and 75. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of June 30, the first day of the plan year for KRS. This report was prepared at the request of the Board of Trustees of the Kentucky Retirement Systems (Board) and is intended for use by the KRS staff and those designated or approved by the Board.

FINANCING OBJECTIVES AND FUNDING POLICY

The employer contribution rate is determined in accordance with Section 61.565 of Kentucky Statute. As specified by the Statute, the employer contribution rate is determined based on a closed thirty-year amortization period beginning July 1, 2013. As a result, the amortization period used in the 2019 actuarial valuation is 24 years. The contribution rate determined by this actuarial valuation becomes effective twelve months after the valuation date. In other words, the contribution rate determined by this June 30, 2019 actuarial valuation will be used by the Board to recommend the Commonwealth's contribution rate for the fiscal year beginning July 1, 2020 and ending June 30, 2021, as well as the subsequent fiscal year beginning July 1, 2021 and ending June 30, 2022.

ASSUMPTIONS AND METHODS

The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation. An experience study was conducted after the June 30, 2018 actuarial valuation and the Board adopted updated assumptions for use in this actuarial valuation. The principle updated assumptions include:

- Change in the rates of salary increases for individuals.
- New post-retirement mortality assumption based on KRS retiree experience and the inclusion of an explicit assumption for future improvement in mortality.
- Updated mortality assumptions for members during employment and for disabled retirees.
- Change in the rates of retirement.
- Change in the rates that an active member is assumed to become an inactive member in the System prior to retirement.
- Updated rates of disability incidence.

The experience study included a review of several economic assumptions which encompassed the rate of inflation, the investment return assumption, and the payroll growth assumption. However, those assumptions remain unchanged from the prior actuarial valuation.

The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) since the June 30, 2018 valuation to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rate, and funding periods. The actuarial calculations are intended to provide information for rational decision making.

BENEFIT PROVISIONS

The benefit provisions reflected in these valuations are those which were in effect on June 30, 2019. There were no benefit changes since the prior valuation.

DATA

Member data for retired, active and inactive members was supplied as of June 30, 2019, by the KRS staff. The staff also supplied asset information as of June 30, 2019. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. GRS is not responsible for the accuracy or completeness of the information provided to us by KRS.

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of SPRS as of June 30, 2019.

All of our work conforms with generally accepted actuarial principles and practices, and is in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Kentucky Code of Laws and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries and consultants. Mr. Newton and Mr. White are Enrolled Actuaries. All three of the undersigned are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries. All of the undersigned are experienced in performing valuations for large public retirement systems.

Sincerely,

Gabriel, Roeder, Smith & Co.

Jo Newton

Joseph P. Newton, FSA, MAAA, EA
Pension Market Leader and Actuary

Daniel J White

Daniel J. White, FSA, MAAA, EA
Senior Consultant and Actuary

Janie Shaw

Janie Shaw, ASA, MAAA
Consultant and Actuary

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Appendix B Benefit Provisions

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SECTION 1

EXECUTIVE SUMMARY

Summary of Principal Results

(Dollar amounts expressed in thousands)

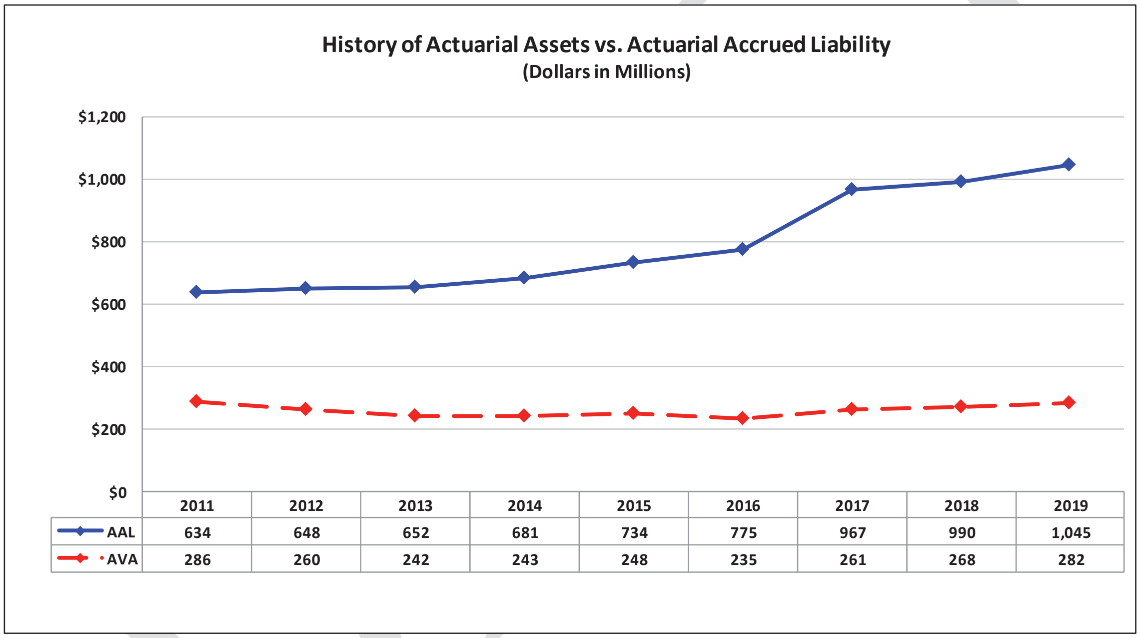
	SPRS	
	June 30, 2019	June 30, 2018
Actuarially Determined Contribution:		
Retirement	136.12%	120.54%
Insurance	20.85%	19.50%
Total	156.97%	140.04%
Contribution Rate for Next Fiscal Year[1]	156.97%	146.28%
Assets:		
Retirement		
• Actuarial value (AVAR)	$282,162	$268,259
• Market value (MVAR)	$286,165	$267,572
• Ratio of actuarial to market value of assets	98.6%	100.3%
Insurance		
• Actuarial value (AVAI)	$197,395	$187,535
• Market value (MVAI)	$201,206	$190,847
• Ratio of actuarial to market value of assets	98.1%	98.3%
Funded Status:		
Retirement		
• Actuarial accrued liability	$1,045,318	$989,528
• Unfunded accrued liability on AVAR	$763,156	$721,269
• Funded ratio on AVAR	27.0%	27.1%
• Unfunded accrued liability on MVAR	$759,153	$721,956
• Funded ratio on MVAR	27.4%	27.0%
Insurance		
• Actuarial accrued liability	$276,809	$262,088
• Unfunded accrued liability on AVAI	$79,414	$74,553
• Funded ratio on AVAI	71.3%	71.6%
• Unfunded accrued liability on MVAI	$75,603	$71,241
• Funded ratio on MVAI	72.7%	72.8%
Membership:		
• Number of		
- Active Members	883	886
- Retirees and Beneficiaries	1,647	1,600
- Inactive Members	557	499
- Total	3,087	2,985
• Projected payroll of active members	$47,752	$48,808
• Average salary of active members	$54,079	$55,088

[1] Contribution rate for fiscal year 2021 will require budgeting during the 2020 legislative session.

Executive Summary (Continued)

Retirement Fund

The unfunded actuarial accrued liability of the retirement system increased by $42 million since the prior year's valuation to $763 million. The largest source of this increase is due to a $44 million increase in the liability due to the updated assumptions. Below is a chart with the historical actuarial value of assets and actuarial accrued liability. The divergence in the assets and liability over the last nine years has generally been due to a combination of: (1) contributions that were insufficient to amortize the unfunded actuarial accrued liability, (2) a decrease in the assumed rate of return in 2015, 2016 and again in 2017, and (3) the actual investment experience being less than the fund's expected investment return assumption.



History of Actuarial Assets vs. Actuarial Accrued Liability
(Dollars in Millions)

	2011	2012	2013	2014	2015	2016	2017	2018	2019
AAL	634	648	652	681	734	775	967	990	1,045
AVA	286	260	242	243	248	235	261	268	282

Executive Summary (Continued)

Summary of Change in Financial Condition of the Insurance Fund

The non-Medicare premiums were lower than expected and the Medicare premiums were higher than expected from calendar year 2019 to 2020. Specifically, the non-Medicare premiums were expected to increase by 7.00% from calendar year 2019 to calendar year 2020 (i.e. the medical trend assumption for non-Medicare premiums used in the actuarial valuation) and the actual average premiums were relatively level. Also, the Medicare premiums were expected to increase by 5.00% from calendar year 2019 to calendar year 2020 (i.e. the medical trend assumption used in the actuarial valuation for Medicare premium) and the actual average premiums increased by 13%. The favorable non-Medicare premium experience offset most of the actuarial loss that resulted from the new Medicare premiums. In fact, the overall premium experience resulted in a small actuarial gain for the hazardous plan which has younger retirees.

Since the prior year's valuation, the unfunded actuarial accrued liability of the insurance fund increased by $5 million since the prior year's valuation to $79 million. The largest source of this increase is due to a $7 million increase in the liability due to the updated actuarial assumptions adopted by the Board as a result of the experience study. The corresponding funded ratio slightly decreased from 71.6% at June 30, 2018 to 71.3% at June 30, 2019.

SECTION 2

DISCUSSION

Discussion

The State Police Retirement System (SPRS) is a defined benefit pension fund that provides pensions and health care coverage for uniformed state police officers. SPRS includes hazardous duty benefits only. This report presents the result of the June 30, 2019 actuarial funding valuation for both the Retirement Fund and Insurance Fund.

The primary purposes of the valuation report are to depict the current financial condition of the Funds and analyze changes in the Fund's financial condition. In addition, the report provides various summaries of the data.

The actuarially determined contribution rates consist of two components: a normal cost rate and an amortization cost to finance the unfunded actuarial accrued liability. The normal cost rate is the theoretical amount which would be required to pay the members' benefits, based on the current plan provisions, if this amount had been contributed from each member's entry date and if the fund's experience exactly followed the actuarial assumptions. This is the amount that it should cost to provide the benefits for an average member. Since members contribute to the fund, only the excess of the normal rate over the member contribution rate is included in the employer contribution rate. The amortization cost is the amount, expressed as a percentage of payroll, necessary to amortize the unfunded actuarial accrued liability. The payroll growth rate and discount rate assumptions are selected by the Board. The funding period is specified in Section 61.565 of Kentucky Statute.

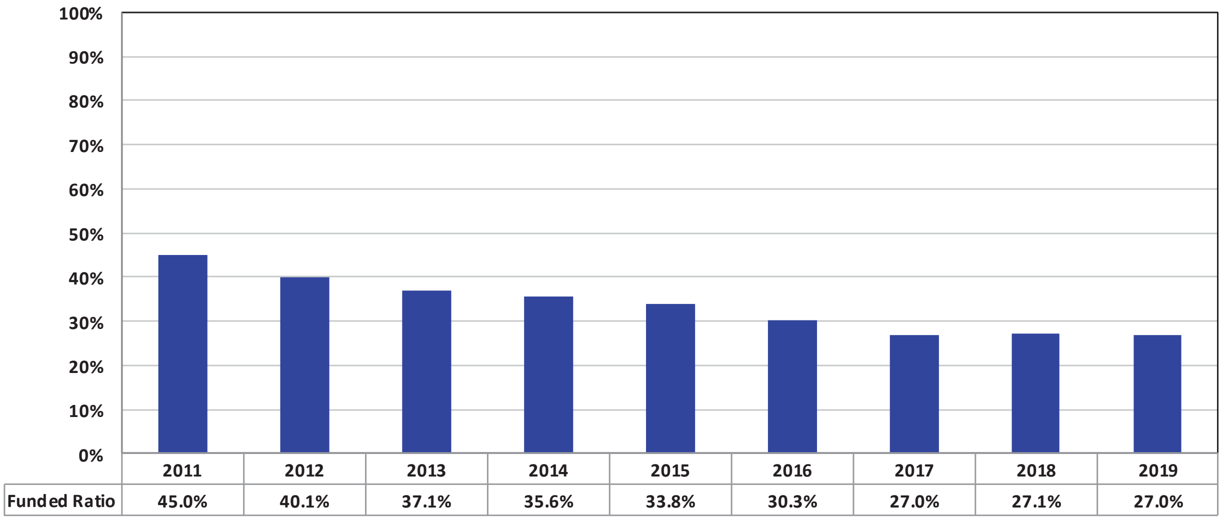
All of the actuarial and financial tables referenced by the other sections of this Report appear in Section 3. Section 4 provides member data and statistical information. Section 5 provides a discussion of various risk measures, which are intended to aid stakeholders in understanding the effects of future experience differing from the assumptions used in performing an actuarial valuation. This section was added to the report this year in compliance with the newly adopted Actuarial Standards of Practice. Appendices A and B provide summaries of the principle actuarial assumptions and methods and plan provisions. Finally, Appendix C provides a glossary of technical terms that are used throughout this report.

Funding Progress

The following charts provide a nine-year history of the retirement fund's funded ratio (i.e. the Actuarial Value of Assets divided by the Actuarial Accrued Liability). The decline in the funded ratio over the last nine years has generally been due to: (1) actual contributions being insufficient to finance the unfunded actuarial accrued liability, (2) a decrease in the assumed rate of return in 2015, 2016 and again in 2017, and (3) actual investment experience being less than the investment return assumption.

Funded Ratio

Actuarial Assets as a percentage of Actuarial Accrued Liability



	2011	2012	2013	2014	2015	2016	2017	2018	2019
Funded Ratio	45.0%	40.1%	37.1%	35.6%	33.8%	30.3%	27.0%	27.1%	27.0%

Assuming the actuarial determined contributions are actually paid in future years and absent future unfavorable experience, we expect the funded ratio to begin improving. Also, the dollar amount of the unfunded actuarial accrued liability, or the difference between the actuarial accrued liability and the actuarial value of assets, is expected to decrease now that the higher contribution rates determined by the June 30, 2017 actuarial valuation became effective July 1, 2018. Table 9, Schedule of Funding Progress, in the following section of the report provides additional detail regarding the funding progress of the Retirement Fund.

Asset Gains/ (Losses)

The actuarial value of assets ("AVA") is based on a smoothed market value of assets, using a systematic approach to phase-in the difference between the actual and expected investment return on the market value of assets (adjusted for receipts and disbursements during the year). This is appropriate because it dampens the short-term volatility inherent in investment markets. The returns are computed net of investment expenses. The actuarial value of assets for the retirement fund increased from $268 million to $282 million since the prior valuation. Table 7 in the following section of the report provides the development of the actuarial value of assets.

The rate of return on the market value of assets for the retirement fund on a dollar-weighted basis for fiscal year 2019 was a 5.5% which is greater than the 5.25% expected annual return. The return on an actuarial (smoothed) asset value was 3.7%, which resulted in a $4 million loss for the fiscal year. This difference in the estimated return on market value and actuarial value illustrates the smoothing effect of the asset valuation method.

The market value of assets is $4 million greater than the actuarial value of assets, which signifies that the retirement fund is in a position of deferred gains to be realized in future years.

Table 6 in the following section of this report provides asset information that was included in the annual financial statements of the System. Also, Tables 6 and 7 shows the estimated yield on a market value basis and on the actuarial asset valuation method.

Actuarial Gains/ (Losses)

The annual actuarial valuation is a snapshot analysis of the benefit liabilities, assets and funded position of the System as of the first day of the plan year. In any one fiscal year, the experience can be better or worse from that which is assumed or expected. The actuarial assumptions do not necessarily attempt to model what the experience will be for any one given fiscal year, but instead try to model the overall experience over many years. Therefore, as long as the actual experience of a retirement system is reasonably close to the current assumptions, the long-term funding requirements of the system will remain relatively consistent.

Below are tables that separately show a reconciliation of the actuarial gains / (losses) since the prior actuarial valuation for the retirement and health insurance funds, which include the effect of asset and liability gains and losses, changes in assumptions, changes in plan provisions, etc.

Experience Gain or (Loss)
(Dollar amounts expressed in thousands)

	Retirement	Insurance
A. Calculation of total actuarial gain or loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	$ 721,269	$ 74,553
2. Normal cost and administrative expenses	11,621	4,054
3. Less: contributions for the year	(65,113)	(13,466)
4. Interest accrual	36,462	4,365
5. Expected UAAL (Sum of Items 1 - 4)	$ 704,239	$ 69,506
6. Actual UAAL as of June 30,2019	$ 763,156	$ 79,414
7. Total gain (loss) for the year (Item 5 - Item 6)	$ (58,917)	$ (9,908)
B. Source of gains and losses		
8. Asset gain (loss) for the year	$ (4,057)	$ (1,392)
9. Liability experience gain (loss) for the year	(10,831)	(863)
10. Plan Change	—	—
11. Assumption change	(44,029)	(7,653)
12. Total	$ (58,917)	$ (9,908)

Of the $59 million and $10 million in actuarial losses experienced by the retirement and insurance funds, respectively, $44 million and $7.7 million were due to the increases in liability resulting from the assumption changes reflected as a result of the experience study as of June 30, 2018 and the updated trend assumption for the insurance fund. Additionally, the insurance fund's liability decreased by a net $0.9 million due to a $3.9 million gain due to the premium experience and a $4.8 million loss attributable to other demographic experience.

Actuarial Assumptions and Methods

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an annual investment return assumption. The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation. An experience study was conducted after the June 30, 2018 actuarial valuation and the Board adopted updated assumptions for use in this actuarial valuation. The principle updated assumptions include:

- Change in the rates of salary increases for individuals.
- New post-retirement mortality assumption based on KRS retiree experience and the inclusion of an explicit assumption for future improvement in mortality.
- Updated mortality assumptions for members during employment and for disabled retirees.
- Change in the rates of retirements.
- Change in the rates that an active member is assumed to become an inactive member in the System prior to retirement.
- Updated rates of disability incidence.

The experience study included a review of several economic assumptions which included the rate of inflation, the investment return assumption, and the payroll growth assumption. However, those assumptions remain unchanged from the prior actuarial valuation.

The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) since the June 30, 2018 valuation to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.

It is our opinion that the assumptions are internally consistent, reasonable, and reflect anticipated future experience of the System. Appendix A includes a summary of the actuarial assumptions and methods used in this valuation.

Future actuarial measurements may differ significantly from the current measurements 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. This report does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

Benefit Provisions

Appendix B of this report includes a summary of the benefit provisions for SPRS. There were not any changes in benefits since the prior valuation.

SECTION 3

ACTUARIAL TABLES

Actuarial Tables

TABLE NUMBER	PAGE	CONTENT OF TABLE
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2	15	ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS
3	16	DEVELOPMENT OF REQUIRED CONTRIBUTION RATE
4	17	ACTUARIAL BALANCE SHEET – RETIREMENT
5	18	ACTUARIAL BALANCE SHEET – INSURANCE
6	19	RECONCILIATION OF SYSTEM NET ASSETS
7	20	DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS – RETIREMENT
8	21	DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS – INSURANCE
9	22	SCHEDULE OF FUNDING PROGRESS
10	23	SUMMARY OF PRINCIPAL ASSUMPTIONS AND METHODS
11	24	SOLVENCY TEST

Development of Unfunded Actuarial Accrued Liability

(Dollar amounts expressed in thousands)

		June 30, 2019	
		Retirement (1)	Insurance (2)
1.	Projected payroll of active members	$ 47,752	$ 47,752
2.	Present value of future pay	$ 468,442	$ 431,213
3.	Normal cost rate		
	a. Total normal cost rate	26.92%	8.41%
	b. Less: member contribution rate	-8.00%	-0.40%
	c. Employer normal cost rate	18.92%	8.01%
4.	Actuarial accrued liability for active members		
	a. Present value of future benefits	$ 310,664	$ 101,969
	b. Less: present value of future normal costs	(113,743)	(25,119)
	c. Actuarial accrued liability	$ 196,921	$ 76,850
5.	Total actuarial accrued liability		
	a. Retirees and beneficiaries	$ 840,795	$ 196,513
	b. Inactive members	7,602	3,446
	c. Active members (Item 4c)	196,921	76,850
	d. Total	$ 1,045,318	$ 276,809
6.	Actuarial value of assets	$ 282,162	$ 197,395
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	$ 763,156	$ 79,414
8.	Funded Ratio	27.0%	71.3%

Actuarial Present Value of Future Benefits

(Dollar amounts expressed in thousands)

			June 30, 2019	
			Retirement (1)	Insurance (2)
1.	Active members			
	a.	Service retirement	$ 296,329	
	b.	Deferred termination benefits and refunds	3,537	
	c.	Survivor benefits	2,231	
	d.	Disability benefits	8,567	
	e.	Total	$ 310,664	$ 101,969
2.	Retired members			
	a.	Service retirement	$ 765,150	
	b.	Disability retirement	12,356	
	c.	Beneficiaries	63,289	
	d.	Total	$ 840,795	$ 196,513
3.	Inactive members			
	a.	Vested terminations	$ 7,261	$ 3,446
	b.	Nonvested terminations	341	N/A
	c.	Total	$ 7,602	$ 3,446
4.	Total actuarial present value of future benefits		$ 1,159,061	$ 301,928

Development of Actuarially Determined Contribution Rate

		June 30, 2019	
		Retirement (1)	Insurance (2)
1.	Total normal cost rate		
	a. Service retirement	24.38%	
	b. Deferred termination benefits and refunds	1.05%	
	c. Survivor benefits	0.33%	
	d. Disability benefits	1.16%	
	e. Total	26.92%	8.41%
2.	Less: member contribution rate	-8.00%	-0.40%
3.	Total employer normal cost rate	18.92%	8.01%
4.	Administrative expenses	0.47%	0.14%
5.	Net employer normal cost rate	19.39%	8.15%
6.	UAAL amortization contribution	116.73%	12.70%
7.	Total calculated employer contribution	136.12%	20.85%

Actuarial Balance Sheet

Retirement Benefits

(Dollar amounts expressed in thousands)

	June 30, 2019 (1)	June 30, 2018 (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	$ 282,162	$ 268,259
b. Present value of future member contributions	$ 37,475	$ 34,933
c. Present value of future employer contributions		
i. Normal cost contributions	$ 76,268	$ 58,838
ii. Unfunded accrued liability contributions	763,156	721,269
iii. Total future employer contributions	$ 839,424	$ 780,107
d. Total assets	$ 1,159,061	$ 1,083,299
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	$ 113,743	$ 93,771
ii. Accrued liability	196,921	188,740
iii. Total present value of future benefits	$ 310,664	$ 282,511
b. Present value of benefits payable on account of current retired members and beneficiaries	$ 840,795	$ 793,303
c. Present value of benefits payable on account of current inactive members	$ 7,602	$ 7,485
d. Total liabilities	$ 1,159,061	$ 1,083,299

Actuarial Balance Sheet

Insurance Benefits

(Dollar amounts expressed in thousands)

	June 30, 2019 (1)	June 30, 2018 (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	$ 197,395	$ 187,535
b. Present value of future member contributions	$ 2,782	$ 2,186
c. Present value of future employer contributions		
i. Normal cost contributions	$ 22,337	$ 22,438
ii. Unfunded accrued liability contributions	79,414	74,553
iii. Total future employer contributions	$ 101,751	$ 96,991
d. Total assets	$ 301,928	$ 286,712
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	$ 25,119	$ 24,624
ii. Accrued liability	76,850	78,937
iii. Total present value of future benefits	$ 101,969	$ 103,561
b. Present value of benefits payable on account of current retired members and beneficiaries	$ 196,513	$ 179,760
c. Present value of benefits payable on account of current inactive members	$ 3,446	$ 3,391
d. Total liabilities	$ 301,928	$ 286,712

Reconciliation of Net Assets

(Dollar amounts expressed in thousands)[1]

	Year Ending	
	June 30, 2019	June 30, 2019
	(1)	(2)
	Retirement	**Insurance**
1. Value of assets at beginning of year	$ 267,572	$ 190,847
2. Revenue for the year		
a. Contributions		
i. Member contributions	$ 5,062	$ 176
ii. Employer contributions	58,948	13,283
iii. Other contributions (less 401h)	1,103	7
iii. Total	$ 65,113	$ 13,466
b. Income		
i. Interest, dividends, and other income	$ 6,567	$ 4,821
ii. Investment expenses	(1,685)	(1,597)
iii. Net	$ 4,881	$ 3,224
c. Net realized and unrealized gains (losses)	9,934	7,591
d. Total revenue	$ 79,928	$ 24,280
3. Expenditures for the year		
a. Disbursements		
i. Refunds	$ 162	$ 0
ii. Regular annuity benefits / Healthcare premiums	60,949	13,942
iii. Other benefit payments[2]	0	(90)
iv. Transfers to other systems	0	0
v. Total	$ 61,111	$ 13,852
b. Administrative expenses and depreciation	225	69
c. Total expenditures	$ 61,335	$ 13,921
4. Increase in net assets (Item 2. - Item 3.)	$ 18,593	$ 10,359
5. Value of assets at end of year (Item 1. + Item 4.)	$ 286,165	$ 201,206
6. Net external cash flow		
a. Dollar amount	$ 3,777	$ (455)
b. Percentage of market value	1.4%	-0.2%
7. Estimated annual return on net assets	5.5%	5.7%

[1] Amounts may not add due to rounding

[1] Retirement assets exclude 401h assets and insurance assets include 401h assets

[2] Insurance benefit payments have been offset by Medicare Drug Reimbursements, Insurance Premiums, and Humana Gain Share Payments

Development of Actuarial Value of Assets

Retirement Benefits

(Dollar amounts expressed in thousands)*

	Year Ending		June 30, 2019
1.	Actuarial value of assets at beginning of year	$	268,259
2.	Market value of assets at beginning of year	$	267,572
3.	Net new investments		
	a. Contributions	$	65,113
	b. Benefit payments		(61,111)
	c. Administrative expenses		(225)
	d. Subtotal	$	3,777
4.	Market value of assets at end of year	$	286,165
5.	Net earnings (Item 4. - Item 2. - Item 3.d.)	$	14,815
6.	Assumed investment return rate for fiscal year		5.25%
7.	Expected return for immediate recognition	$	14,147
8.	Excess return for phased recognition	$	669

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2019	$	669	$	134
b.	2018		5,183		1,037
c.	2017		11,623		2,325
d.	2016		(21,455)		(4,291)
e.	2015		(16,122)		(3,224)
f.	Total			$	(4,021)

10.	Actuarial value of assets as of June 30, 2019 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	282,162
11.	Ratio of actuarial value to market value		98.6%
12.	Estimated annual return on actuarial value of assets		3.7%

* Amounts may not add due to rounding

Development of Actuarial Value of Assets

Insurance Benefits

(Dollar amounts expressed in thousands)*

	Year Ending		June 30, 2019
1.	Actuarial value of assets at beginning of year	$	187,535
2.	Market value of assets at beginning of year	$	190,847
3.	Net new investments		
	a. Contributions	$	13,466
	b. Benefit payments		(13,852)
	c. Administrative expenses		(69)
	d. Subtotal	$	(455)
4.	Market value of assets at end of year	$	201,206
5.	Net earnings (Item 4. - Item 2. - Item 3.d.)	$	10,815
6.	Assumed investment return rate for fiscal year		6.25%
7.	Expected return for immediate recognition	$	11,914
8.	Excess return for phased recognition	$	(1,099)

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2019	$	(1,099)	$	(220)
b.	2018		5,431		1,086
c.	2017		9,723		1,945
d.	2016		(12,288)		(2,458)
e.	2015		(9,762)		(1,952)
f.	Total			$	(1,599)

10.	Actuarial value of assets as of June 30, 2019 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	197,395
11.	Ratio of actuarial value to market value		98.1%
12.	Estimated annual return on actuarial value of assets		5.5%

* Amounts may not add due to rounding

Schedule of Funding Progress

(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Value of Assets (AVA) (2)	Actuarial Accrued Liability (AAL) (3)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2) (4)	Funded Ratio (2)/(3) (5)	Annual Covered Payroll (6)	UAAL as % of Payroll (4)/(6) (7)
			Retirement			
2011	$ 285,581	$ 634,379	$ 348,799	45.0%	$ 48,693	716.3%
2012	259,792	647,689	387,897	40.1%	48,373	801.9%
2013	241,800	651,581	409,780	37.1%	45,256	905.5%
2014	242,742	681,118	438,377	35.6%	44,616	982.6%
2015	248,388	734,156	485,769	33.8%	45,765	1061.4%
2016	234,568	775,160	540,593	30.3%	45,551	1186.8%
2017	261,320	967,145	705,825	27.0%	48,598	1452.4%
2018	268,259	989,528	721,269	27.1%	48,808	1477.8%
2019	282,162	1,045,318	763,156	27.0%	47,752	1598.2%
			Insurance			
2011	$ 123,687	$ 438,428	$ 314,740	28.2%	$ 48,693	646.4%
2012	124,372	333,904	209,532	37.2%	48,373	433.2%
2013	136,321	222,327	86,006	61.3%	45,256	190.0%
2014	155,595	234,271	78,676	66.4%	44,616	176.3%
2015	167,775	254,839	87,064	65.8%	45,765	190.2%
2016	172,704	257,197	84,494	67.1%	45,551	185.5%
2017	180,464	276,641	96,177	65.2%	48,598	197.9%
2018	187,535	262,088	74,553	71.6%	48,808	152.7%
2019	197,395	276,809	79,414	71.3%	47,752	166.3%

Summary of Principal Assumptions and Methods

Below is a summary of the principal economic assumptions, cost method, and the method for financing the unfunded actuarial accrued liability:

Valuation date:	June 30, 2019
Actuarial cost method:	Entry Age Normal
Amortization method:	Level percentage of payroll (0% payroll growth assumed)
Amortization period for contribution rate:	24-year closed period
Asset valuation method:	5-Year Smoothed Market
Actuarial assumptions:	
Investment rate of return, retirement	5.25%
Investment rate of return, insurance	6.25%
Projected salary increases	3.55% to 16.05% (varies by service)
Inflation	2.30%
Post-retirement benefit adjustments	0.00%
Retiree Mortality	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale use a base year of 2019.

Solvency Test

(Dollar amounts expressed in thousands)

	Actuarial Accrued Liability				Portion of Aggregate Accrued Liabilities Covered by Assets		
June 30,	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed)	Valuation Assets	Active	Retired	ER Financed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Retirement				
2009	$ 41,664	$ 459,585	$ 101,079	$ 329,967	100.0%	62.7%	0.0%
2010	42,012	475,893	94,541	304,577	100.0%	55.2%	0.0%
2011	43,574	499,194	91,611	285,581	100.0%	48.5%	0.0%
2012	41,139	523,017	83,533	259,792	100.0%	41.8%	0.0%
2013	39,788	535,720	76,072	241,800	100.0%	37.7%	0.0%
2014	41,831	563,011	76,276	242,742	100.0%	35.7%	0.0%
2015	41,567	605,855	86,734	248,388	100.0%	34.1%	0.0%
2016	41,871	636,499	96,791	234,568	100.0%	30.3%	0.0%
2017	44,798	773,982	148,365	261,320	100.0%	28.0%	0.0%
2018	43,835	800,788	144,905	268,259	100.0%	28.0%	0.0%
2019	41,948	848,397	154,973	282,162	100.0%	28.3%	0.0%
			Insurance				
2009	$ -	$ 167,091	$ 196,940	$ 123,527	100.0%	73.9%	0.0%
2010	-	253,581	181,380	121,175	100.0%	47.8%	0.0%
2011	-	252,440	185,988	123,687	100.0%	49.0%	0.0%
2012	-	190,259	143,645	124,372	100.0%	65.4%	0.0%
2013	-	139,509	82,818	136,321	100.0%	97.7%	0.0%
2014	-	143,402	90,869	155,595	100.0%	100.0%	13.4%
2015	-	170,447	84,392	167,775	100.0%	98.4%	0.0%
2016	-	177,094	80,103	172,704	100.0%	97.5%	0.0%
2017	-	186,390	90,251	180,464	100.0%	96.8%	0.0%
2018	-	183,151	78,937	187,535	100.0%	100.0%	5.6%
2019	-	199,959	76,850	197,395	100.0%	98.7%	0.0%

SECTION 4

MEMBERSHIP INFORMATION

Membership Tables

TABLE NUMBER	PAGE	CONTENT OF TABLE
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18	33	SCHEDULE OF ANNUITANTS ADDED TO AND REMOVED FROM ROLLS

Summary of Membership Data

(Total dollar amounts expressed in thousands)

			June 30, 2019 (1)		June 30, 2018 (4)
1.	Active members				
	a.	Males	855		857
	b.	Females	28		29
	c.	Total members	883		886
	d.	Total annualized prior year salaries	$ 47,752		$ 48,808
	e.	Average salary[2]	$ 54,079		$ 55,088
	f.	Average age	36.7		37.3
	g.	Average service	10.0		10.5
	h.	Member contributions with interest	$ 41,948		$ 43,835
	i.	Average contributions with interest[2]	$ 47,506		$ 49,476
2.	Vested inactive members[1]				
	a.	Number	289		176
	b.	Total annual deferred benefits	$ 811		$ 815
	c.	Average annual deferred benefit[2]	$ 2,806		$ 4,632
	d.	Average age at the valuation date	43.5		41.0
3.	Nonvested inactive members[1]				
	a.	Number	268		323
	b.	Total member contributions with interest	$ 339		$ 327
	c.	Average contributions with interest[2]	$ 1,264		$ 1,012
4.	Service retirees				
	a.	Number	1,363		1,331
	b.	Total annual benefits	$ 54,142		$ 52,821
	c.	Average annual benefit[2]	$ 39,723		$ 39,686
	d.	Average age at the valuation date	63.0		62.8
5.	Disabled retirees				
	a.	Number	54		52
	b.	Total annual benefits	$ 959		$ 909
	c.	Average annual benefit[2]	$ 17,757		$ 17,473
	d.	Average age at the valuation date	58.0		59.3
6.	Beneficiaries				
	a.	Number	230		217
	b.	Total annual benefits	$ 6,303		$ 5,896
	c.	Average annual benefit[2]	$ 27,404		$ 27,168
	d.	Average age at the valuation date	67.1		65.9

[1] Vested inactive member section includes Tier 1 members eligible for a benefit equal to the actuarially equivalent of two times the member's contribution balance. These members were included in the nonvested inactive member section in 2018.

[2] Average dollar amounts shown are expresed to the dollar.

Summary of Historical Active Membership

	Active Members		Covered Payroll[1]		Average Annual Pay	
June 30, (1)	Number (2)	Percent Increase /(Decrease) (3)	Amount in Thousands (4)	Percent Increase /(Decrease) (5)	Amount (6)	Percent Increase /(Decrease) (7)
2010	961		$ 51,507		$ 53,597	
2011	965	0.4%	48,693	-5.5%	50,459	-5.9%
2012	907	-6.0%	48,373	-0.7%	53,332	5.7%
2013	902	-0.6%	45,256	-6.4%	50,173	-5.9%
2014	855	-5.2%	44,616	-1.4%	52,182	4.0%
2015	937	9.6%	45,765	2.6%	48,842	-6.4%
2016	908	-3.1%	45,551	-0.5%	50,167	2.7%
2017	903	-0.6%	48,598	6.7%	53,818	7.3%
2018	886	-1.9%	48,808	0.4%	55,088	2.4%
2019	883	-0.3%	47,752	-2.2%	54,079	-1.8%

Distribution of Active Members by Age and by Years of Service

SPRS Members

	Years of Credited Service												
Attained Age	0 Count & Avg. Comp.	1 Count & Avg. Comp.	2 Count & Avg. Comp.	3 Count & Avg. Comp.	4 Count & Avg. Comp.	5-9 Count & Avg. Comp.	10-14 Count & Avg. Comp.	15-19 Count & Avg. Comp.	20-24 Count & Avg. Comp.	25-29 Count & Avg. Comp.	30-34 Count & Avg. Comp.	35 & Over Count & Avg. Comp.	Total Count & Avg. Comp.
Under 20	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-24	50	12	0	2	0	0	0	0	0	0	0	0	64
	$21,511	$43,726	$0	$50,639	$0	$0	$0	$0	$0	$0	$0	$0	$26,587
25-29	28	25	11	18	44	7	0	0	0	0	0	0	133
	$24,764	$43,537	$45,825	$45,004	$49,941	$51,581	$0	$0	$0	$0	$0	$0	$42,515
30-34	13	1	19	9	33	90	13	0	0	0	0	0	178
	$25,460	$42,435	$45,306	$46,237	$48,908	$52,434	$56,866	$0	$0	$0	$0	$0	$49,003
35-39	6	1	5	1	9	49	70	22	1	0	0	0	164
	$21,890	$44,374	$45,534	$44,188	$50,442	$52,198	$58,526	$62,834	$89,827	$0	$0	$0	$55,050
40-44	1	1	4	0	7	22	39	90	16	0	0	0	180
	$2,382	$45,882	$43,646	$0	$48,382	$52,806	$59,532	$67,525	$75,822	$0	$0	$0	$62,975
45-49	1	0	2	0	2	8	15	40	34	7	0	0	109
	$20,250	$0	$43,818	$0	$65,906	$52,434	$55,601	$66,047	$79,382	$88,750	$0	$0	$68,397
50-54	0	0	0	0	0	2	7	12	12	6	0	0	39
	$0	$0	$0	$0	$0	$51,961	$55,807	$66,726	$80,434	$77,584	$0	$0	$69,897
55-59	0	0	0	0	0	0	4	4	3	1	1	0	13
	$0	$0	$0	$0	$0	$0	$54,737	$65,180	$78,576	$95,028	$99,380	$0	$69,985
60-64	0	0	0	0	0	0	1	1	0	0	0	1	3
	$0	$0	$0	$0	$0	$0	$52,578	$66,370	$0	$0	$0	$99,737	$72,895
65 & Over	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	99	40	41	30	95	178	149	169	66	14	1	1	883
	$22,767	$43,646	$45,239	$45,722	$49,851	$52,376	$58,081	$66,445	$78,832	$84,413	$99,380	$99,737	$54,079

Distribution of Annuitant Monthly Benefit by Status and Age
Retirees and Beneficiaries
(Dollar amounts expressed in thousands)

	Retirement		Disability		Survivors & Beneficiaries		Total	
Current Age (1)	Number of Annuitants (2)	Total Annual Benefit Amount (3)	Number of Annuitants (4)	Total Annual Benefit Amount (5)	Number of Annuitants (6)	Total Annual Benefit Amount (7)	Number of Annuitants (8)	Total Annual Benefit Amount (9)
Under 50	198	$ 7,568	18	$ 330	30	$ 431	246	$ 8,329
50 - 54	190	7,339	7	139	11	224	208	7,702
55 - 59	179	7,316	5	79	12	202	196	7,597
60 - 64	146	6,086	8	117	18	419	172	6,622
65 - 69	267	11,189	5	73	37	1,009	309	12,271
70 - 74	211	8,304	8	168	45	1,458	264	9,930
75 - 79	95	3,308	1	1	27	912	123	4,221
80 - 84	45	1,634	2	52	17	546	64	2,232
85 - 89	26	1,112	0	0	23	828	49	1,940
90 And Over	6	286	0	0	10	274	16	560
Total	**1,363**	**$ 54,142**	**54**	**$ 959**	**230**	**$ 6,303**	**1,647**	**$ 61,404**

Retired Lives Summary

	Male Lives		Female Lives		Total	
Form of Payment	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Basic	155	$ 461,690	16	$ 48,537	171	$ 510,228
Joint & Survivor:						
100% to Beneficiary	153	488,188	1	4,814	154	493,002
66 2/3% to Beneficiary	91	346,052	2	7,542	93	353,594
50% to Beneficiary	79	287,299	1	2,605	80	289,904
Pop-up Option	639	2,255,465	5	10,874	644	2,266,339
Social Security Option:						
Age 62 Basic	30	75,689	0	0	30	75,689
Age 62 Survivorship	118	222,382	1	4,416	119	226,798
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	0	0	0	0
10 Years Certain	7	30,568	0	0	7	30,568
10 Years Certain & Life	37	126,008	3	6,759	40	132,767
15 Years Certain & Life	17	45,227	1	3,919	18	49,145
20 Years Certain & Life	38	115,598	2	3,979	40	119,577
Refund	0	0	0	0	0	0
Partial Lump Sum Option (PLSO):						
12 Month Basic	0	0	0	0	0	0
24 Month Basic	0	0	0	0	0	0
36 Month Basic	0	0	2	466	2	466
12 Month Survivor	6	20,781	0	0	6	20,781
24 Month Survivor	4	5,953	0	0	4	5,953
36 Month Survivor	9	16,914	0	0	9	16,914
Total:	1,383	$ 4,497,814	34	$ 93,910	1,417	$ 4,591,725

Beneficiary Lives Summary

	Male Lives		Female Lives		Total	
Form of Payment (1)	Number (2)	Monthly Benefit Amount (3)	Number (4)	Monthly Benefit Amount (5)	Number (6)	Monthly Benefit Amount (7)
Basic	2	$ 821	8	$ 7,052	10	$ 7,872
Joint & Survivor:						
100% to Beneficiary	8	12,792	63	171,187	71	183,979
66 2/3% to Beneficiary	2	1,206	13	29,580	15	30,786
50% to Beneficiary	1	1,873	20	30,085	21	31,958
Pop-up Option	2	1,154	49	140,977	51	142,131
Social Security Option:						
Age 62 Basic	0	0	2	2,281	2	2,281
Age 62 Survivorship	3	3,102	45	95,475	48	98,577
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	0	0	0	0
10 Years Certain	2	4,076	0	0	2	4,076
10 Years Certain & Life	0	0	0	0	0	0
15 Years Certain & Life	0	0	1	721	1	721
20 Years Certain & Life	1	6,686	7	8,834	8	15,520
Refund	0	0	0	0	0	0
Partial Lump Sum Option (PLSO):						
12 Month Basic	0	0	0	0	0	0
24 Month Basic	0	0	0	0	0	0
36 Month Basic	0	0	0	0	0	0
12 Month Survivor	0	0	0	0	0	0
24 Month Survivor	0	0	1	7,351	1	7,351
36 Month Survivor	0	0	0	0	0	0
Total:	21	$ 31,710	209	$ 493,542	230	$ 525,252

Schedule of Retirants Added to And Removed from Rolls

(Dollar amounts except average allowance expressed in thousands)

	Added to Rolls	Removed from Rolls	Rolls End of the Year		% Increase	Average
Year Ended	Number	Number	Number	Annual Benefits	in Annual Benefit	Annual Benefit
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2010	54	15	1,223	$ 45,516		$ 37,217
2011	52	12	1,263	47,467	4.3%	37,583
2012	52	16	1,299	49,887	5.1%	38,404
2013	63	16	1,346	50,906	2.0%	37,820
2014	95	28	1,413	53,432	5.0%	37,815
2015	62	15	1,460	54,930	2.8%	37,623
2016	65	10	1,515	56,650	3.1%	37,393
2017	30	9	1,536	57,253	1.1%	37,274
2018	81	17	1,600	59,626	4.1%	37,266
2019	74	27	1,647	61,404	3.0%	37,282

SECTION 5

ASSESSMENT AND DISCLOSURE OF RISK

Risks Associated with Measuring the Accrued Liability And Actuarially Determined Contribution

(As Required by ASOP No. 51)

The determination of SPRS's accrued liability and actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. The risk measures illustrated in this section are intended to aid stakeholders in understanding the effects of future experience differing from the assumptions used in performing an actuarial valuation. These risk measures may also help with illustrating the potential volatility in the funded status and actuarially determined contributions that result from differences between actual experience and the expected experience based on the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience (economic and demographic) differing from the assumptions, changes in assumptions due to changing conditions, changes in contribution requirements due to modifications to the funding policy, and changes in the liability and cost due to changes in plan provisions or applicable law. The scope of this actuarial valuation does not include any analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the System's future financial condition include:

- Investment risk – actual investment returns may differ from expected returns;
- Longevity risk – members may live longer or shorter than expected and receive pensions for a time period different than assumed;
- Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future contributions differing from expected;
- Salary and payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liabilities or contributions differing from expected;
- Asset/Liability mismatch – changes in assets may be inconsistent with changes in liabilities, thereby altering the relative difference between the assets and liabilities which may alter the funded status and contribution requirements;
- Contribution risk – actual contributions may differ from expected future contributions (for example, actual contributions not being paid in accordance with the System's funding policy, withdrawal liability assessments or other anticipated payments to the plan are not being paid, or material changes occurring in the anticipated number of covered employees, covered payroll, or another relevant contribution base).

Effects of certain experience can generally be anticipated. For example, if investment returns since the most recent actuarial valuation is less (or more) than the assumed rate of return, then the funded status of the plan can be expected to decrease (or increase) more than anticipated.

The contribution rate in this report was established in accordance with applicable Statutes and assumptions adopted by the Board. However, stakeholders should be aware that the scheduled contribution rates specified in State Code do not necessarily guarantee that the contribution requirements will not increase in a future year.

Employer Risk with Contribution Rates

Currently KRS collects contributions from the Commonwealth based on the total payroll of employees who are earning benefits in SPRS (i.e. covered payroll). The actuarially determined contribution rate is comprised of two components - the normal cost rate (to pay for the benefits accruing in the next year) and the unfunded amortization (to pay for the benefits accrued by members in previous years). The unfunded amortization is calculated by first determining the dollar amount necessary to pay for the unfunded liability based on KRS's funding policy, and then by dividing that dollar amount by expected covered payroll to convert that contribution requirement to a percentage of payroll (i.e. a contribution rate).

As the contribution requirement, as a percentage of payroll, increases then there is increased incentive for participating employers to make deliberate business action to reduce their payroll reported to the System in order to reduce their pension cost.

Plan Specific Risk Measures

Risks faced by a pension plan evolve over time. A relatively new plan with virtually no assets and paying few benefits will experience lower investment risk than a mature plan with a significant amount of assets and large number of members receiving benefits. There are a few measures that can assist stakeholders in understanding and comparing the maturity of a plan to other systems, which include:

- Ratio of market value of assets to payroll: The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. If assets are approximately the same as covered payroll, an investment return that is 5% different than assumed would equal 5% of payroll. In another example, if the assets are approximately twice as large as covered payroll, an investment return that is 5% different than assumed would equal 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- Ratio of actuarial accrued liability to payroll: The ratio of actuarial accrued liability to payroll can be used as a measure to indicate the potential volatility of contributions due to volatility in the liability experience. For instance, if the actuarial accrued liability is 5 times the size of the covered payroll, then a change in the liability that is 2% different than expected would be a change in magnitude that is 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- Percentage of Expected Contributions Actually Received: This measure identifies the percentage difference between the contributions the fund expects to receive during the fiscal year to and actual contributions received by the fund during the fiscal year. A percentage that is less than 100% means that actual contributions the fund received were less than the expected contributions determined by a prior actuarial valuation. On the other hand, a percentage that is greater than 100% means that actual contributions the fund received were more than the expected contributions.

- Ratio of active to retired members: A relatively mature open plan is likely to have close to the same number of actives to retirees resulting in a ratio that is around 1.0. On the other hand, a super-mature plan, or a plan that is closed to new entrants will have more retirees than active members resulting in a ratio below 1.0. As this ratio declines, a larger portion of the total actuarial accrued liability in the System is attributable to retirees. This metric also typically moves in tandem with the liability to payroll metric, which provides an indication of potential contribution volatility.

The following tables provide a summary of these measures for SPRS for the current year and the prior four years so stakeholders can identify how these measures are trending. While ASOP No. 51 requires this disclosure with respect to only the retirement fund, we have included this information for the insurance fund for completeness.

SPRS

	Retirement Fund					Insurance Fund				
	June 30,					June 30,				
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015
Ratio of the market value of assets to total payroll	5.99	5.48	5.26	4.78	5.40	4.21	3.91	3.68	3.54	3.61
Ratio of actuarial accrued liability to payroll	21.89	20.27	19.90	17.02	16.04	5.80	5.37	5.69	5.65	5.57
Ratio of net cash flow to market value of assets	1.3%	-2.5%	4.5%	-11.7%	-7.0%	-0.2%	-2.3%	-2.3%	-2.2%	-1.9%
Percentage of Expected Contribution Actually Received	101% [1]	101%	121%	92%	125%	100% [1]	103%	103%	112%	102%
Ratio of actives to retirees and beneficiaries	0.54	0.55	0.59	0.60	0.64					

[1] Expected contribution for FYE2019 based on the actuarially determined contribution rate of 146.28% from the June 30, 2017 valuation and expected compensation based on census data from the June 30, 2018 valuation

APPENDIX A

ACTUARIAL ASSUMPTIONS AND METHODS

Summary of Actuarial Methods and Assumptions

The following presents a summary of the actuarial assumptions and methods used in the valuation of the State Police Retirement System.

In general, the assumptions and methods used in the valuation are based on the actuarial experience study for the five-year period ending June 30, 2018 and adopted by the Board in April 2019.

Investment return rate:

Assumed annual rate of 5.25% net of investment expenses for the retirement fund

Assumed annual rate of 6.25% net of investment expenses for the insurance fund

Price Inflation:

Assumed annual rate of 2.30%

Payroll Growth Assumption (used for amortization of unfunded accrued liabilities):

Assumed annual rate of 0.00%

Rates of Annual Salary Increase:

Assumed rates of annual salary increases are shown below.

Service Years	Annual Rates of Salary Increases		
	Merit & Seniority	Price Inflation & Productivity	Total Increase
0	12.50%	3.55%	16.05%
1	5.00%	3.55%	8.55%
2	4.00%	3.55%	7.55%
3	2.00%	3.55%	5.55%
4	2.00%	3.55%	5.55%
5	2.00%	3.55%	5.55%
6	2.00%	3.55%	5.55%
7	1.00%	3.55%	4.55%
8	1.00%	3.55%	4.55%
9	0.00%	3.55%	3.55%
10 & Over	0.00%	3.55%	3.55%

Retirement rates:

Assumed annual rates of retirement are shown below. Rates are only applicable for members who are eligible for a service retirement.

Service	Members participating Before 9/1/2008[1]	Members participating on or after 9/1/2008[2]	Members participating after 1/1/2014[2]
20	22.0%		
21	22.0%		
22	22.0%		
23	28.0%		
24	28.0%		
25	28.0%	17.6%	16.0%
26	28.0%	17.6%	16.0%
27	28.0%	17.6%	16.0%
28	44.0%	22.4%	16.0%
29	44.0%	22.4%	16.0%
30	44.0%	22.4%	100.0%
31	58.0%	22.4%	
32	58.0%	22.4%	
33	58.0%	35.2%	
34	58.0%	35.2%	
35	58.0%	35.2%	
36	58.0%	46.4%	
37	58.0%	46.4%	
38	58.0%	46.4%	
39	58.0%	46.4%	
40+	58.0%	46.4%	

[1] *The annual rate of service retirement is 100% at age 55.*

[2] *The annual rate of service retirement is 100% at age 60.*

For members hired after 7/1/2003 and prior to 9/1/2008, the rates shown above are multiplied by 80% if the member is under the age of 55 to reflect the different retiree health insurance benefit.

Disability rates:

An abbreviated table with assumed rates of disability is show below.

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

Withdrawal rates (for causes other than disability and retirement):

Assumed annual rates of withdrawal are shown below and include pre-retirement mortality rates as described on the next page.

Service	Annual Rates of Withdrawal
1	15.00%
2	4.82%
3	3.76%
4	3.15%
5	2.71%
6	2.37%
7	2.09%
8	1.86%
9	1.66%
10	1.48%
11	1.32%
12	1.17%
13	1.04%
14	0.92%
15	0.80%
16	0.70%
17	0.60%
18	0.51%
19	0.42%
20	0.34%
21 & Over	0.00%

Mortality Assumption:

Pre-retirement mortality: PUB-2010 Public Safety Mortality, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010.

Post-retirement mortality (non-disabled): System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2019.

The following table provides the life expectancy for a non-disabled retiree in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years					
Gender	**Year of Retirement**				
	2020	**2025**	**2030**	**2035**	**2040**
Male	21.0	21.4	21.8	22.2	22.6
Female	24.0	24.4	24.8	25.2	25.6

Post-retirement mortality (disabled): PUB-2010 Disabled Mortality table, with a 4-year set-forward for both male and female rates, projected with the ultimate rates from the mortality improvement scale using a base year of 2010.

Marital status:

100% of employees are assumed to be married, with the female spouse 3 years younger than the male spouse.

Line of Duty Disability

70% of disabilities are assumed to occur in the line of duty

Line of Duty Death

25% of deaths are assumed to occur in the line of duty

Dependent Children:

For members who receive a duty-related death or disability benefit, the member is assumed to be survived by two dependent children, each age 6 with payments for 15 years.

Form of Payment:

Members are assumed to elect a life-only annuity at retirement.

Actuarial Cost Method:

Entry Age Normal, Level Percentage of Pay. The Entry Age Normal actuarial cost method allocates the System's actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level percent of pay necessary to fully fund the expected benefits to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

Health Care Age Related Morbidity/Claims Utilization:

To model the impact of aging on the underlying health care costs for Medicare retirees, the valuation relied on the Society of Actuaries' 2013 Study "Health Care Costs – From Birth to Death". Table 4 (Development of Plan Specific Medicare Age Curve) was used to model the impact of aging for ages 65 and over.

Health Care Cost Trend Rates[1]*:*

Year	Non-Medicare Plans	Medicare Plans	Dollar Contribution[2]
2021	6.25%	5.50%	1.50%
2022	6.25%	5.40%	1.50%
2023	6.25%	5.30%	1.50%
2024	6.00%	5.20%	1.50%
2025	5.80%	5.10%	1.50%
2026	5.60%	5.00%	1.50%
2027	5.40%	4.90%	1.50%
2028	5.20%	4.80%	1.50%
2029	5.00%	4.70%	1.50%
2030	4.80%	4.60%	1.50%
2031	4.60%	4.50%	1.50%
2032	4.40%	4.40%	1.50%
2033	4.20%	4.30%	1.50%
2034	4.05%	4.20%	1.50%
2035 & Beyond	4.05%	4.05%	1.50%

[1] All increases are assumed to occur on January 1. The 2020 premiums were known at the time of the valuation and were incorporated into the liability measurement.
[2] Applies to members participating on or after July 1, 2003

Health care trend assumptions are based on the model issued by the Society of Actuaries "Getzen model of Long-Run Medical Cost Trends for the SOA; Thomas E. Getzen, iHEA and Temple University 2014 © Society of Actuaries.

The underlying assumptions used to develop the health care trend rates include:

- A short run period-this is a period for which anticipated health care trend rates are manually set based on local information as well as plan-specific and carrier information.
- Long term real GDP growth – 1.75%
- Long term rate of inflation – 2.30%
- Long term nominal GDP growth – 4.05%
- Year that excess rate converges to 0 – 2035

Health care trend rates are thus the manually set rates for the short run period and rates which decline to an ultimate trend rate which equals the assumed nominal long term GDP growth rate.

Health Care Participation Assumptions:

- Active members are assumed to elect health coverage at retirement at the following participation rates.

Service at Retirement	Members participating before 7/1/2003*	Members participating after 7/1/2003
Under 10	100%	100%
10-14	100%	100%
15-19	100%	100%
Over 20	100%	100%

* 100% of members with a duty disability or a duty death (in service) benefit are assumed to elect coverage at retirement.

- Future retirees are assumed to have a similar distribution by plan type as the current retirees.

Medicare Plan	Participation
Medical Only	7%
Essential	8%
Premium	85%

Non-Medicare Plan	Participation
LivingWell Limited	2%
LivingWell Basic	13%
LivingWell CDHP	27%
LivingWell PPO	58%

Health Care Participation Assumptions (continued):

- 100% of deferred vested members participating are assumed to elect health coverage at retirement.

- Deferred vested members are assumed to begin health coverage at age 50 for members participating before January 1, 2014 and at age 60 for members participating on or after January 1, 2014.

- 75% of future retirees, with hazardous service, are assumed to elect spouse health care coverage. 100% of spouses with health care coverage are assumed to continue coverage after the member's death.

Excise ("Cadillac") Tax:

For taxable years beginning after December 31, 2021, a 40% excise tax will be required to be paid (by the employer and/or insurer) on the aggregate cost of the health plan in excess of certain legislated thresholds. For 2018, the thresholds are $850 per month for individual coverage and $2,292 per month for family coverage.

Both Actuarial Standard of Practice No. 6 and GASB Statement Nos. 74 and 75 reference this tax, and, in accordance with these standards an estimate of the impact of the Cadillac tax has been included in this valuation.

Assumptions and methods used to determine the impact of the Cadillac Tax include:

- 2018 thresholds of $850/$2,292 were indexed annually by 2.30%.
- Premium data submitted was not adjusted for permissible exclusions to the Cadillac Tax.
- There were no special adjustments to the dollar limit other than those permissible for non-Medicare retirees over 55.

In this valuation, the impact of the Cadillac Tax has been calculated by increasing the employer paid premiums for Non-Medicare retirees, who became participants before July 1, 2003, by 0.9%. Non-Medicare retirees who became participants after July 1, 2003 receive dollar subsidies per year of service, which are not expected to exceed the overall Non-Medicare premiums. As a result, the costs attributable to the Cadillac Tax for members who became participants after July 1, 2003 will be paid by the retirees.

Other Assumptions

1. Valuation payroll (used for determining the amortization contribution rate): Current fiscal year payroll.

2. Individual salaries used to project benefits: For salary amounts prior to the valuation date, the salary from the last fiscal year is projected backward with the valuation salary scale assumption. For future salaries, the salary from the last fiscal year is projected forward with one year's salary scale.

3. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported salaries represent amounts paid to members during the year ending on the valuation date.

4. Current active members that terminated employment (for reasons other than retirement, disability, or death) are assumed to commence their retirement benefits at first unreduced retirement eligibility. Members are assumed to elect a refund of member contributions if the value of their account balance exceeds the present value of the deferred benefit. Members participating in the Cash Balance plan are assumed to elect to receive a lump sum of their cash balance account if their account balance exceeds the present value of the deferred benefit and the member is not eligible for insurance benefits at termination.

5. The beneficiaries of current active members that die while active are assumed to commence their survivor benefits at the member's first unreduced retirement eligibility. Beneficiaries are assumed to elect a refund of member contributions if the value of the member's account balance exceeds the present value of the survivor benefit. Beneficiaries of active members that die while in the line of duty are assumed to commence their survivor benefits immediately at the death of the member.

6. There will be no recoveries once disabled.

7. Cash Balance Provisions: The cash balance interest crediting rate while a member is an active employee is assumed to equal 4.9375% (based upon the 5.25% assumed investment return). The interest crediting rate after a member terminates employment is 4%.

8. Decrement timing: Decrements of all types are assumed to occur mid-year. Decrement rates are used as described in this report, without adjustment for multiple decrement table effects.

9. Service: All members are assumed to accrue 1 year of benefit and eligibility service each year.

10. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

11. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

12. Current Inactive Population (Retirement Fund): All non-vested members are assumed to take an immediate refund of member contributions. Vested members are assumed to elect an immediate refund of member contributions at the valuation date if the value of their account balance exceeds the present value of their deferred benefit. Members hired prior to September 1, 2008 are assumed to retire at age 55 and members hired on or after September 1, 2008 are assumed to retire at age 60.

Participant Data

Participant data was supplied in electronic text files. There were separate files for (i) active and inactive members, and (ii) members and beneficiaries receiving benefits.

The data for active and terminated members included date of birth, gender, date of participation, benefit tier indicator, service with the current system, total vesting service, salary, employee contribution account balances, and employer pay credits for members participating in the cash balance plan. For retired members and beneficiaries, the data included date of birth, gender, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and form of payment code.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

Changes in assumptions since the prior valuation:

- Annual salary increases were updated based on the 2018 Experience Study
- Annual rates of retirement, disability, withdrawal, and mortality were updated based on the 2018 Experience Study
- The percent of disabilities assumed to occur in the line of duty was updated from 0% to 70%
- The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.
- The assumed impact of the Cadillac Tax was changed from a 3.6% to a 0.9% load on employer paid premiums for Non-Medicare retirees who became participants prior to July 1, 2003.

Development of Baseline Claims Cost

For non-Medicare retirees, the initial per capita costs were based on the plan premiums effective January 1, 2020, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. The spouse/dependent premium of $870.41 for non-Medicare retirees is based on a blending of Family and Couple premiums for the current retirees that have over 4 years of hazardous service. The fully-insured premiums KRS pays the Kentucky Employees' Health Plan (KEHP) are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit rate subsidy for the non-Medicare eligible retirees. Actuarial Standard of Practice No. 6 (ASOP No. 6) requires aging subsidies (or implicit rate subsidies) to be recognized. However, the KRS health insurance trusts are only used to reimburse KEHP for the employer's portion of the blended premiums. Said another way, the trusts are not used to fund the difference between the underlying retiree claims and the blended KEHP premiums. As a result, the retiree health care liabilities developed in this report for the non-Medicare retirees are based solely on the premiums charged by KEHP, without any age-adjustment. GASB Statements No. 74 and No. 75 prohibit such a deviation from ASOP No. 6. The liabilities developed in this report are solely for the purpose of funding the benefits paid by the health insurance funds and are not appropriate for financial statement disclosures required by GASB. GRS provides separate GASB reports to KRS which include the liabilities associated with the implicit rate subsidy.

FOR THOSE NOT ELIGIBLE FOR MEDICARE		
AGE	MEMBER	SPOUSE/DEPENDENTS
<65	$728.75	$870.41

For Medicare retirees, the initial per capita costs were estimated based on the plan premiums effective January 1, 2020, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. Age graded and sex distinct premiums are utilized for retirees over the age of 65. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

FOR THOSE ELIGIBLE FOR MEDICARE		
AGE	MALE	FEMALE
65	$207.21	$195.44
75	242.43	236.56
85	256.36	259.38

Appendix B of the report provides a full schedule of premiums.

Mehdi Riazi is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Mehdi Riazi

Mehdi Riazi, FSA, EA, MAAA

APPENDIX B

BENEFIT PROVISIONS

Summary of Benefit Provisions for State Police Retirement System (SPRS)

SPRS Employees

Retirement: Tier 1, Participation before 9/1/2008

Normal Retirement Eligibility	Age 55 with at least 1 month of service credit; or Any age with at least 20 years of service
Benefit Amount	If a member has at least 60 months of service, the monthly benefit is 2.50% times final average compensation times years of service. 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. Final average compensation is based on the member's highest 3 years of compensation.
Early Retirement Eligibility	Age 50 with at least 15 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement eligibility precedes the member's normal retirement date.

SPRS Employees (continued)

Retirement: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Normal Retirement Eligibility	Age 60 with at least 5 years of service; or Any age with at least 25 years of service
Benefit Amount	The monthly benefit is equal to the applicable benefit multiplier times final average compensation times years of service.

Years of Service	Benefit Multiplier
10 or less	1.30%
10-20	1.50%
20-25	2.25%
Greater than 25	2.50%

Final compensation is based on the member's highest 3 years of compensation.

Early Retirement Eligibility	Age 50 with at least 15 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement date precedes the member's normal retirement eligibility.

Retirement: Tier 3, Participation on or after 1/1/2014

Normal Retirement Eligibility	Age 60 with at least 5 years of service; or Any age with at least 25 years of service
Benefit Amount	Each year that the member is active, a 7.50% employer pay credit and the employee's 8.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. 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 in that year 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. At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.
Early Retirement Eligibility	N/A

SPRS Employees (continued)

Deferred Vested Benefit: Tier 1, Participation before 9/1/2008

Eligibility	At least 1 month of service credit
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Eligibility	5 years of service
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit Tier 3, Participation on or after 1/1/2014

Eligibility	5 years of service
Benefit Amount	At termination of employment, members may choose to leave their account balance with the System and retire once they are eligible. The hypothetical account balance will earn 4% annual interest after termination. Members may also choose to withdrawal their entire accumulated balance. If a member does not have 5 years of service at termination, the member is eligible to receive a partial refund of their account balance. This refund includes the member's contributions with interest.

Disability Retirement: Participation before 8/1/2004

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	Disability benefits are calculated in the same manner as the normal retirement benefit with years of service and final compensation being determined as of the date of disability, except that if the member has less than 20 years of service at disability, service credit shall be added to the person's total service beginning with the last date of paid employment and continuing to the member's 55th birthday, with total service not exceeding 20 years. Total service credit added shall not be greater than the member's actual service at disability.

SPRS Employees (continued)

Disability Retirement: Participation on or after 8/1/2004 but before 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 25% of the member's final monthly rate of pay or the member's normal retirement benefit (without reduction for early retirement) with years and final compensation being determined as of the date of disability.

Disability Retirement: Participation on or after 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 25% of the member's final monthly rate of pay or the member's retirement benefit calculated at the member's normal retirement date.

Line of Duty Disability Benefit

Disability Benefit	If the disability is a direct result of an act in the line of duty, the benefit shall not be less than 25% of the member's final monthly rate of pay. Additionally, each eligible dependent child will receive 10% of the member's monthly final rate of pay up to a maximum of 40%.

Pre-Retirement Death Benefit

Eligibility	Eligible for early or normal retirement; or Under age 55 with at least 60 months of service and actively working at the time of death; or At least 144 months of service, if no longer actively working
Spouse Benefit	The member's retirement benefit calculated in the same manner as if the member had retired on the day of the member's death and elected a 100% joint and survivor benefit. The benefit is actuarially reduced if the member dies prior to their normal retirement age.

Pre-Retirement Death Benefit (Death in the Line of Duty)

Eligibility	One month of service credit
Spouse Benefit	A $10,000 lump sum payment plus a monthly payment of 75% of the deceased member's final monthly average pay. Each dependent child will receive 10% of the final monthly average pay (not to exceed a total child benefit of 25% while the spouse is alive). A spouse may also elect the non-line of duty death benefit.
Non-Spouse Benefit	If the beneficiary is only one person who is a dependent receiving at least 50% of his or her support from the member, the beneficiary may elect a lump sum payment of $10,000.
Child Benefit	In the event there is no surviving spouse, the benefit is 50% of final monthly average pay for one child, 65% of final average pay for two children, or 75% of final average pay for three or more eligible children.

SPRS Employees (continued)

Post-Retirement Death Benefit

Eligibility	48 months of service, and in receipt of retirement benefits
Death Benefit	A $5,000 lump sum payment

Member Contributions

Tier 1, Participation before 9/1/2008	8% of creditable compensation. Members who do not receive a retirement benefit are entitled to a full refund of contributions with interest. The annual interest rate is set by the KRS board, not less than 2.0%.
Tier 2, Participation on or after 9/1/2008 but before 1/1/2014	8% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest. The annual interest rate is 2.5%.
Tier 3, Participation after 1/1/2014	8% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest.

Changes since the Prior Valuation

There have been no changes in benefit provisions since the prior actuarial valuation.

Summary of Main Retiree Insurance Benefit Provisions

Insurance Tier 1: Participation began before 7/1/2003

Benefit Eligibility	Recipient of a retirement allowance

Benefit Amount

Non-Hazardous Service	Percentage of Member Premium Paid by Retirement System	Hazardous Service	Percentage of Member & Dependent Premium Paid by Retirement System
Less than 4 years	0%	Less than 4 years	0%
4 – 9 years	25%	4 – 9 years	25%
10 – 14 years	50%	10 – 14 years	50%
15 – 19 years	75%	15 – 19 years	75%
20 or more years	100%	20 or more years	100%

The percentage paid by the retirement system is applied to the 'contribution' plan selected by the KRS Board.

Duty Disability Retirement	If disability was a result of injuries sustained while in the line of duty, the member receives 100% of the maximum contribution for the member and dependents.
Duty Death in Service	If an active employee's death was a result of injuries sustained while in the line of duty, the member's spouse and children receive a fully subsidized health insurance benefit.
Non-Duty Death in Service	If the surviving spouses is in receipt of a pension allowance, he or she is eligible for continued health coverage. The percentage of the premium paid for by the retirement system is based on the member's years of hazardous service at the time of death.
Surviving Spouse of a Retiree	A surviving spouse of a retiree, who is in receipt of a pension allowance, will receive a premium subsidy based on the member's years of hazardous service.
Hazardous employees who retired prior to August 1, 1998	System's contribution for spouse and dependents is based on total service.

Insurance Tier 2: Participation began on or after 7/1/2003, but before 9/1/2008

Benefit Eligibility	Recipient of a retirement allowance with at least 120 months of service at retirement
Non-Hazardous Subsidy	Monthly contribution of $10 for each year of earned non-hazardous service. The monthly contribution is increased by 1.5% each July 1. As of July 1, 2019, the Non-Hazardous monthly contribution was $13.58/year of service. Upon the retiree's death, the surviving spouse may continue coverage (if in receipt of a retirement allowance) but will be 100% responsible for the premiums.
Hazardous Subsidy	Monthly contribution of $15 for each year of earned hazardous service. The monthly contribution is increased by 1.5% each July 1. As of July 1, 2019, the Hazardous monthly contribution was $20.37/year of service. Upon the retiree's death, the surviving spouse of a hazardous duty member will receive a monthly contribution of $10 ($13.58 as of July 1, 2019) for each year of hazardous service.
Duty Disability Retirement	If disability was a result of injuries sustained while in the line of duty, the member receives a benefit equal to at least 20 times the Non-Hazardous monthly contribution.
Duty Death in Service	If an active employee's death was a result of injuries sustained while in the line of duty, the member's spouse and children receive a fully subsidized health insurance benefit.
Non-Duty Death in Service	If the surviving spouse is in receipt of a pension allowance, he or she is eligible for continued health coverage. The percentage of the premium paid for by the retirement system is based on the member's years of hazardous service at the time of death.

Insurance Tier 3: Participation began on or after 9/1/2008

Tier 3 insurance benefits are identical to Tier 2, except Tier 3 members are required to have at least 180 months of service in order to be eligible.

Monthly Health Plan Premiums – Effective January 1, 2020

	Non-Medicare Plan Options				
Plan Option	**Single**	**Parent Plus**	**Couple**	**Family**	**Family X-Ref**
LivingWell PPO*	$731.82	$1,044.12	$1,604.96	$1,787.46	$881.40
LivingWell CDHP	710.94	982.30	1,342.78	1,500.50	821.36
LivingWell Basic	683.58	942.52	1,457.82	1,624.66	801.82
Living Well Limited	608.24	866.76	1,334.18	1,485.46	731.68

Medicare Plan Options	
Kentucky Retirement Systems - Medical Only Plan	$176.26
Kentucky Retirement Systems – Medicare Advantage/Essential Plan	63.15
Kentucky Retirement Systems – Medicare Advantage/Premium Plan*	250.75

*For 2020, the contribution plans selected by the KRS Board were the LivingWell PPO plan option for non-Medicare retirees and the Medicare Advantage Premium plan option for Medicare retirees.

Dollar Contribution Amount for Insurance Tier 2 and Tier 3

Monthly contribution amounts per year of service as of July 1, 2019.

Non-Hazardous Service	Hazardous Service
$13.58	$20.37

Note: Non-Hazardous benefits are applicable to SPRS members with prior service in a Non-Hazardous System.

Changes since the Prior Valuation

There have been no changes to benefit provisions since the prior valuation.

APPENDIX C

GLOSSARY

Glossary

Actuarial Accrued Liability (AAL): That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

Actuarial Assumptions: Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

Actuarial Cost Method or ***Funding Method:*** A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ADC.

Actuarial Gain or ***Actuarial Loss:*** A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)

b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and

c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, non-retired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations that provide the financial information of the plan, such as the funded ratio, unfunded actuarial accrued liability and the ADC.

Actuarial Value of Assets or ***Valuation Assets:*** The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.

Actuarially Determined: Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Actuarially Determined Contribution (ADC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and the Amortization Payment.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

Amortization Payment: The portion of the pension plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Closed Amortization Period: A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: A retirement plan that is not a Defined Contribution Plan. Typically a defined benefit plan is one in which benefits are defined by a formula applied to the member's compensation and/or years of service.

Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Experience Study: A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.

Funding Period or ***Amortization Period:*** The term "Funding Period" is used two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ADC. This funding period is specified in State statute. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on a statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: Governmental Accounting Standards Board.

GASB 67 and ***GASB 68***: Governmental Accounting Standards Board Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting and reporting rules for public retirement systems and the employers that sponsor, participate in, or contribute to them. Statement No. 67 sets the accounting rules for the financial reporting of the retirement systems, while Statement No. 68 sets the rules for the employers that sponsor, participate in, or contribute to public retirement systems.

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded

Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but may not decrease by exactly one year in the subsequent year's actuarial valuation. For instance, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year.

Unfunded Actuarial Accrued Liability: The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Valuation Date or Actuarial Valuation Date: The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

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KENTUCKY RETIREMENT SYSTEMS

TO: Members of the of the Kentucky Retirement Systems Board of Trustees

FROM: Retiree Health Plan Committee

DATE: November 14, 2019

SUBJECT: Retiree Health Plan Committee Report

The Retiree Health Plan Committee met on Tuesday, November 12, 2019, and reviewed an informational presentation from Humana regarding the KRS Medicare Eligible Pharmacy Review for 2020, 2020 Dental Benefit Review and Diabetic Digital Outreach Programs.

2020 Formulary changes:

- Prior authorization changes have a 0.5% member impact - 10.3% in 2019.
- Negative tier changes has a 2.8% member impact - 2.7% in 2019.
- Positive tier changes have a 1.6% member impact - 0.4% in 2019.
- Step therapy has a 0.7% member impact - 1.5% in 2019.

The Committee also reviewed 2019 – 2020 Customer Service Enhancements. The KRS Retiree Health Care (RHC) Online Web Enrollment Process can now accommodate submission of the health insurance application and the hazardous duty retiree dependent verification Form 6256. After the forms are submitted online an email is generated to the member with a copy of the forms attached confirming the retiree successfully enrolled in the plan and completed the 6256 verification. The system contribution paid towards the member's benefit is immediately available for viewing in the individual's retiree self-service account. During the month of October, 2,484 forms (6256) were completed on the web, resulting in a reduction of staff overtime (400+ hours).

RHC also coordinated several emails regarding Open Enrollment that were sent to approximately 26,000 individuals with a 97%-99% delivery rate. The open rate was 54%-71%, and a click rate of 15%-27%. RHC provided outreach during Open Enrollment at the Kentucky Employee Health Plan (KEHP) and Humana benefit fairs and seminars (29 events, 2,000 retirees) across the state. Other Open Enrollment retiree meetings were attended by a RHC Speaker to discuss the KEHP and Humana Medicare Plans (200 retirees).

RHC staff saw 807 office visitors during October and answered 13,217 phone calls and 346 emails. KRS also provided one-on-one web enrollment education at KRS with the individual retirees.

RHC discussed the cost of printing the Open Enrollment Materials and postage associated with the mailings with the Committee. The cost of printing and mailing will be $88,000 for 32,000 KEHP Open Enrollment Books, 25,000 New Retiree Books, 2,500 Qualifying Event books and

3,500 Medicare Age In Plan Books. RHC will review options to decrease cost and enhance customer service. One area of consideration is printing and mailing a flyer/small book for Open Enrollment with the changes, and posting the large book on the KRS Website. Another option being considered, a mandatory web enrollment for the retirees on the KEHP plan for 2021 or 2022. Additional information will be presented to the Committee in PY 2020 and will provide updated statistics and costs.

KENTUCKY RETIREMENT SYSTEMS
INVESTMENTS

To: KRS Board of Trustees
From: Richard Robben, Executive Director of Investments
Date: November 14th, 2019
Subject: Report on Recent Investment Committee Activities

Investment Activity

New Investments

Adams Street Partners Private Credit Fund II – At the November 12th meeting the Investment Committee approved a $250mm investment into the ASP Private Credit Fund II, and a $250mm sidecar co-investment fund. The fund invest exclusively in senior debt used to finance private equity transactions. Return target for the levered sleeve is 9% -11% per annum.

Barings Real Estate European Value Add II – At the November 12th meeting the Investment Committee approved a €212.5mm investment into the BREEVA Fund II. The fund is a European focused value add real estate fund, and targets an IRR of 12% to 14%.

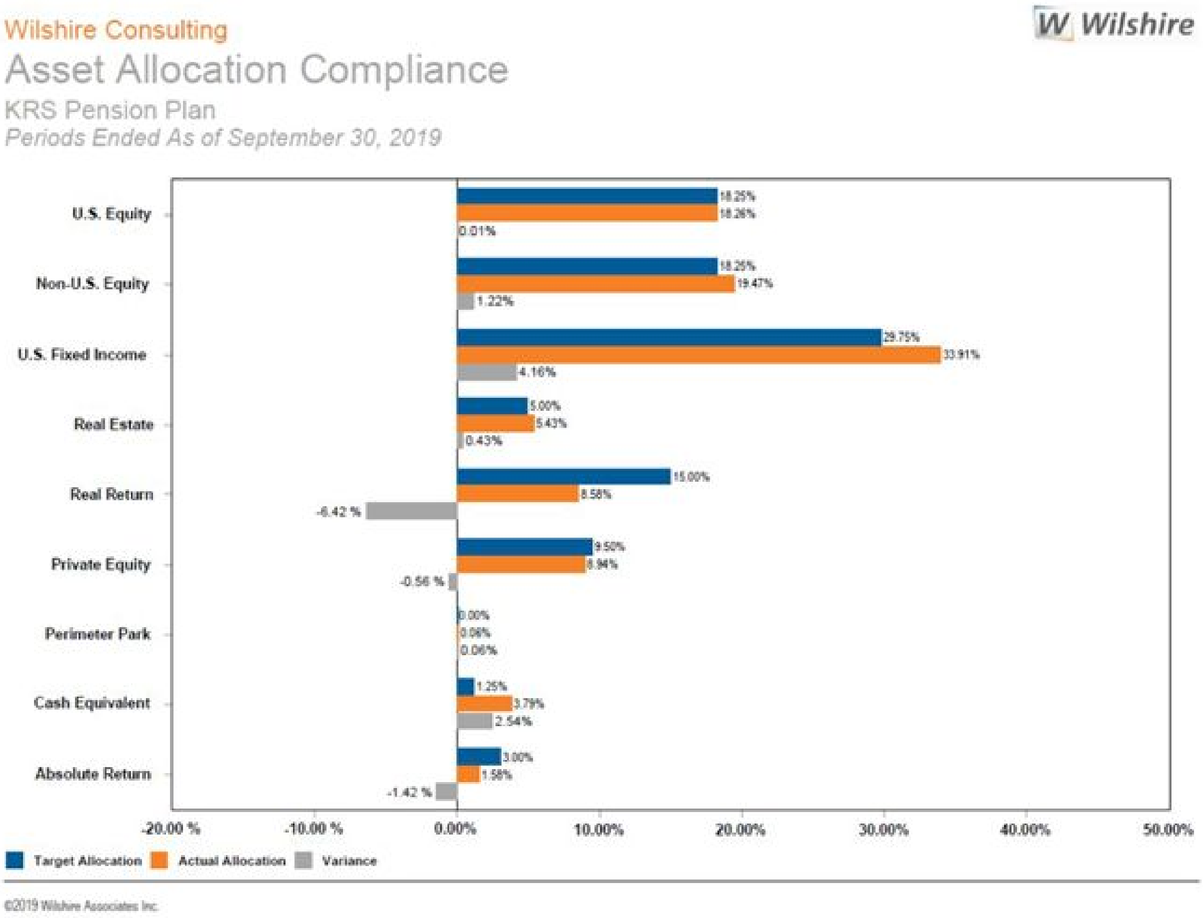
Lord Abbett Short Duration (Core Fixed Income) – On November 4th, staff allocated an additional $150mm to the Lord Abbett Short Duration Fund. This was a sweep of excess cash from the KERS and SPRS accounts.

Benefit Street Partners: (Private Credit) - On October 1st, Staff allocated $17.5MM to a dedicated co-investment vehicle with BSP. The vehicle will only invest in loans that are contained in the KRS SMA, and the co-investments do not accrue a management or performance fee from the manager.

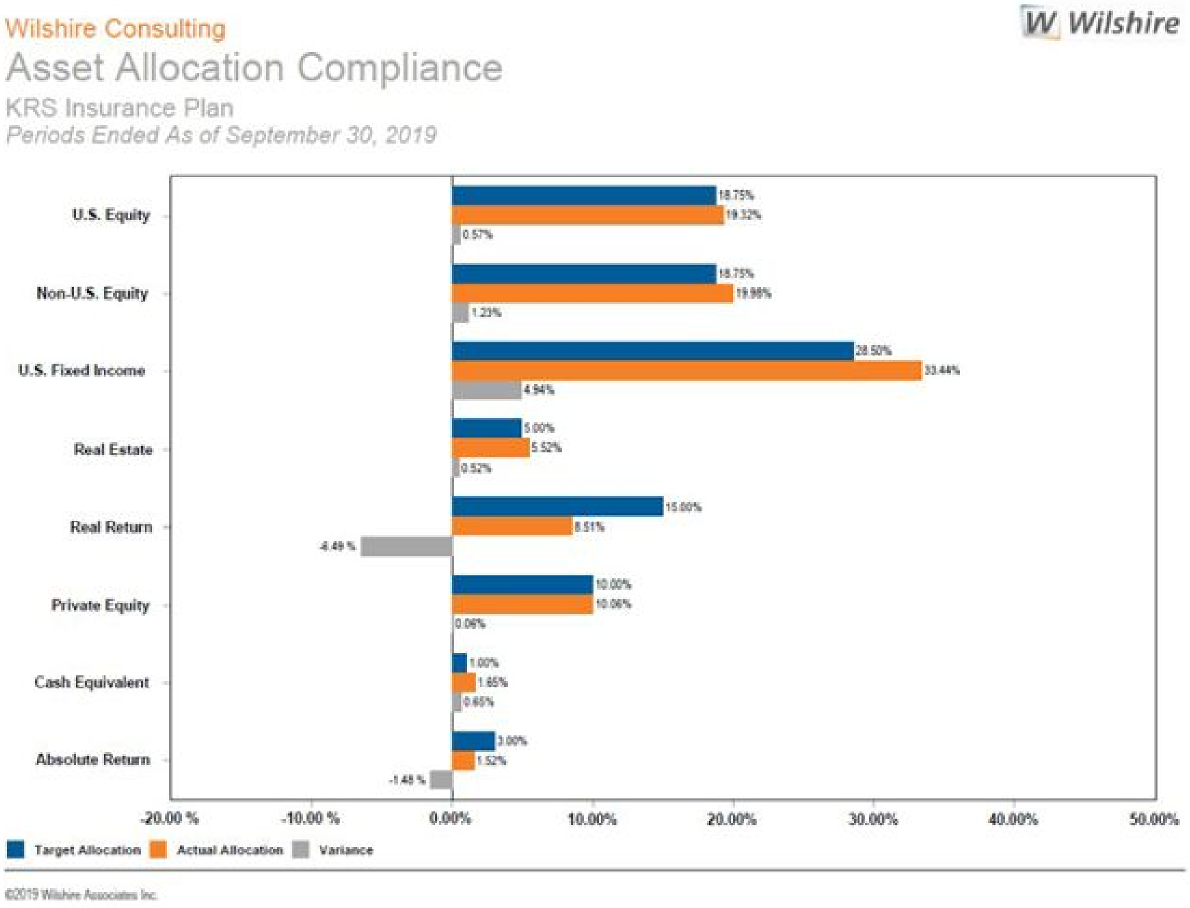
Other Activities

Staff continues to work with Wilshire and the Investment Committee on changes to our Investment Policy Statement to bring it in-line with current best practices. We anticipate this work to be complete in Early 2020.

Asset Allocation - Pension



Asset Allocation - Insurance



Wilshire Consulting

Asset Allocation Compliance

KRS Insurance Plan

Periods Ended As of September 30, 2019

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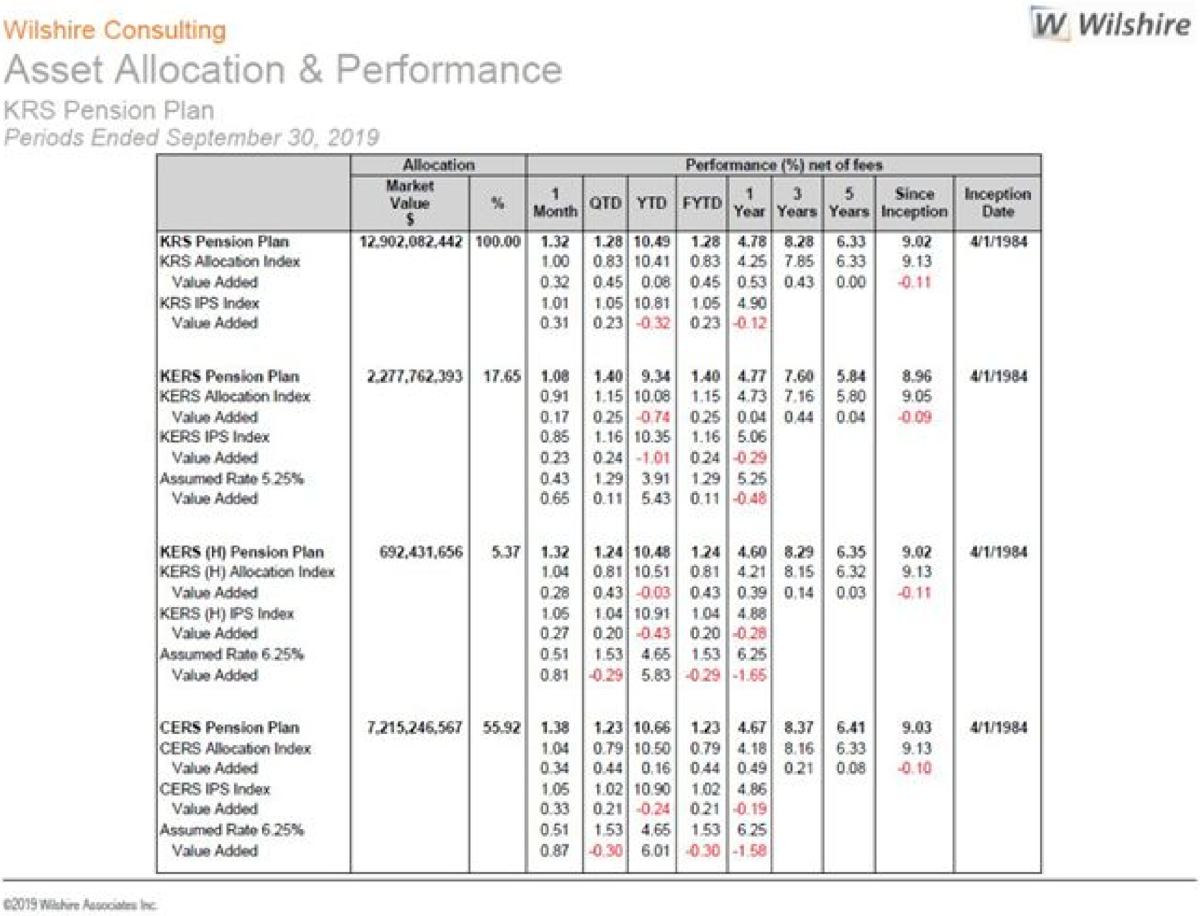
Performance

Performance through the first quarter of the fiscal year has been above each systems benchmark, but below the assumed rate of return for each plan with the exception of the KERS plan, where the FYTD performance is slightly ahead of the prorated assumed rate of return. Private Equity, Real Estate, and Fixed Income have been the best performing asset classes over the last quarter.

Performance - Pension



Wilshire Consulting

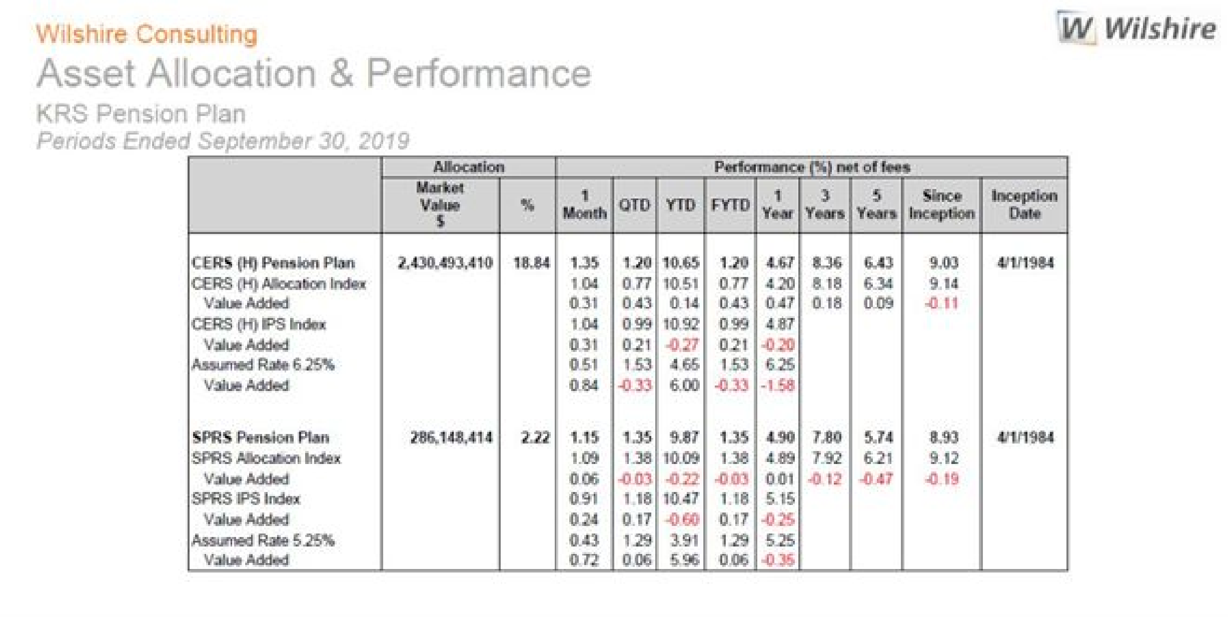
Asset Allocation & Performance

KRS Pension Plan

Periods Ended September 30, 2019

	Allocation		Performance (%) net of fees								
	Market Value $	%	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
KRS Pension Plan	**12,902,082,442**	**100.00**	**1.32**	**1.28**	**10.49**	**1.28**	**4.78**	**8.28**	**6.33**	**9.02**	**4/1/1984**
KRS Allocation Index			1.00	0.83	10.41	0.83	4.25	7.85	6.33	9.13	
Value Added			0.32	0.45	0.08	0.45	0.53	0.43	0.00	-0.11	
KRS IPS Index			1.01	1.05	10.81	1.05	4.90				
Value Added			0.31	0.23	-0.32	0.23	-0.12				
KERS Pension Plan	**2,277,762,393**	**17.65**	**1.08**	**1.40**	**9.34**	**1.40**	**4.77**	**7.60**	**5.84**	**8.96**	**4/1/1984**
KERS Allocation Index			0.91	1.15	10.08	1.15	4.73	7.16	5.80	9.05	
Value Added			0.17	0.25	-0.74	0.25	0.04	0.44	0.04	-0.09	
KERS IPS Index			0.85	1.16	10.35	1.16	5.06				
Value Added			0.23	0.24	-1.01	0.24	-0.29				
Assumed Rate 5.25%			0.43	1.29	3.91	1.29	5.25				
Value Added			0.65	0.11	5.43	0.11	-0.48				
KERS (H) Pension Plan	**692,431,656**	**5.37**	**1.32**	**1.24**	**10.48**	**1.24**	**4.60**	**8.29**	**6.35**	**9.02**	**4/1/1984**
KERS (H) Allocation Index			1.04	0.81	10.51	0.81	4.21	8.15	6.32	9.13	
Value Added			0.28	0.43	-0.03	0.43	0.39	0.14	0.03	-0.11	
KERS (H) IPS Index			1.05	1.04	10.91	1.04	4.88				
Value Added			0.27	0.20	-0.43	0.20	-0.28				
Assumed Rate 6.25%			0.51	1.53	4.65	1.53	6.25				
Value Added			0.81	-0.29	5.83	-0.29	-1.65				
CERS Pension Plan	**7,215,246,567**	**55.92**	**1.38**	**1.23**	**10.66**	**1.23**	**4.67**	**8.37**	**6.41**	**9.03**	**4/1/1984**
CERS Allocation Index			1.04	0.79	10.50	0.79	4.18	8.16	6.33	9.13	
Value Added			0.34	0.44	0.16	0.44	0.49	0.21	0.08	-0.10	
CERS IPS Index			1.05	1.02	10.90	1.02	4.86				
Value Added			0.33	0.21	-0.24	0.21	-0.19				
Assumed Rate 6.25%			0.51	1.53	4.65	1.53	6.25				
Value Added			0.87	-0.30	6.01	-0.30	-1.58				

Performance – Pension Cont.



Wilshire Consulting

Wilshire

Asset Allocation & Performance

KRS Pension Plan

Periods Ended September 30, 2019

	Allocation		Performance (%) net of fees								
	Market Value $	%	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
CERS (H) Pension Plan	**2,430,493,410**	**18.84**	**1.35**	**1.20**	**10.65**	**1.20**	**4.67**	**8.36**	**6.43**	**9.03**	**4/1/1984**
CERS (H) Allocation Index			1.04	0.77	10.51	0.77	4.20	8.18	6.34	9.14	
Value Added			0.31	0.43	0.14	0.43	0.47	0.18	0.09	-0.11	
CERS (H) IPS Index			1.04	0.99	10.92	0.99	4.87				
Value Added			0.31	0.21	-0.27	0.21	-0.20				
Assumed Rate 6.25%			0.51	1.53	4.65	1.53	6.25				
Value Added			0.84	-0.33	6.00	-0.33	-1.58				
SPRS Pension Plan	**286,148,414**	**2.22**	**1.15**	**1.35**	**9.87**	**1.35**	**4.90**	**7.80**	**5.74**	**8.93**	**4/1/1984**
SPRS Allocation Index			1.09	1.38	10.09	1.38	4.89	7.92	6.21	9.12	
Value Added			0.06	-0.03	-0.22	-0.03	0.01	-0.12	-0.47	-0.19	
SPRS IPS Index			0.91	1.18	10.47	1.18	5.15				
Value Added			0.24	0.17	-0.60	0.17	-0.25				
Assumed Rate 5.25%			0.43	1.29	3.91	1.29	5.25				
Value Added			0.72	0.06	5.96	0.06	-0.35				

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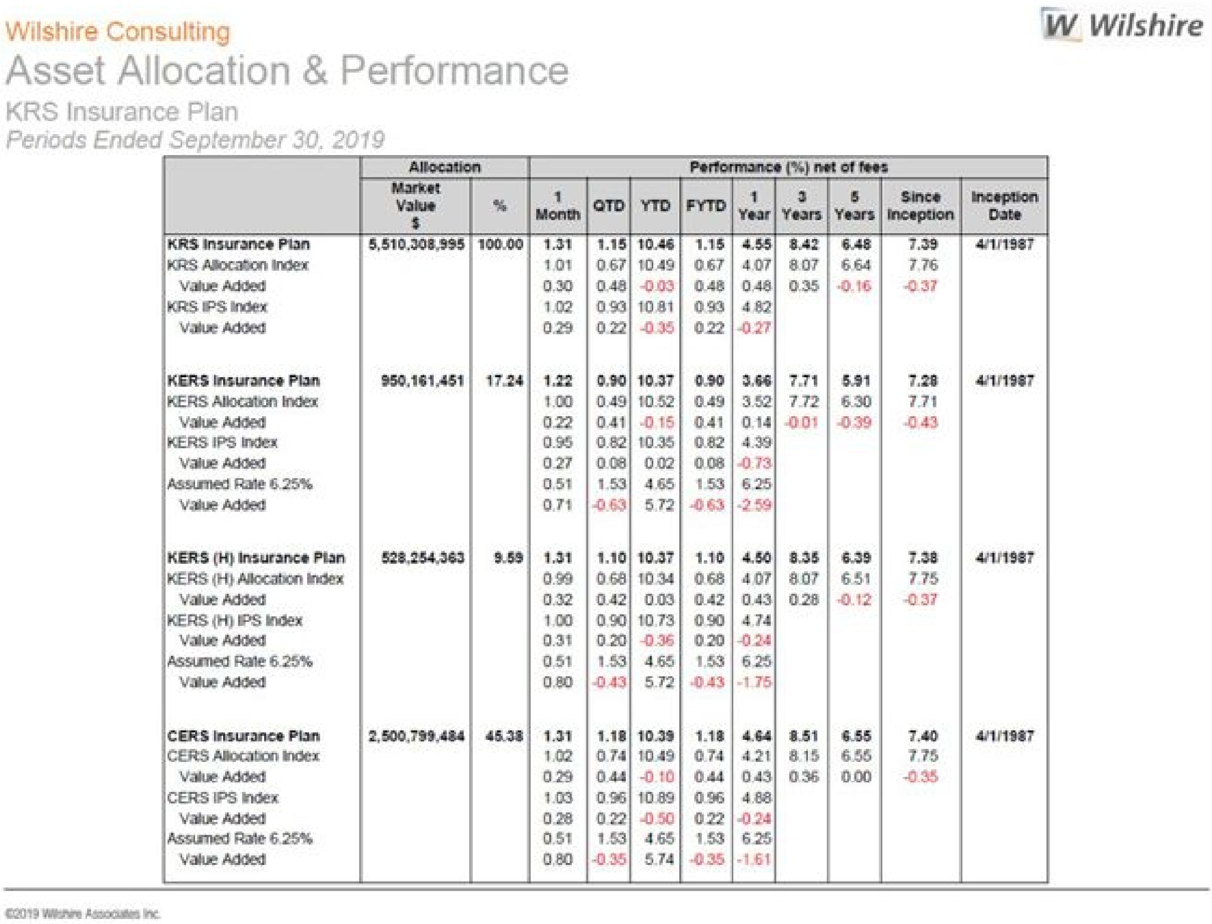
Performance – Insurance



Wilshire Consulting

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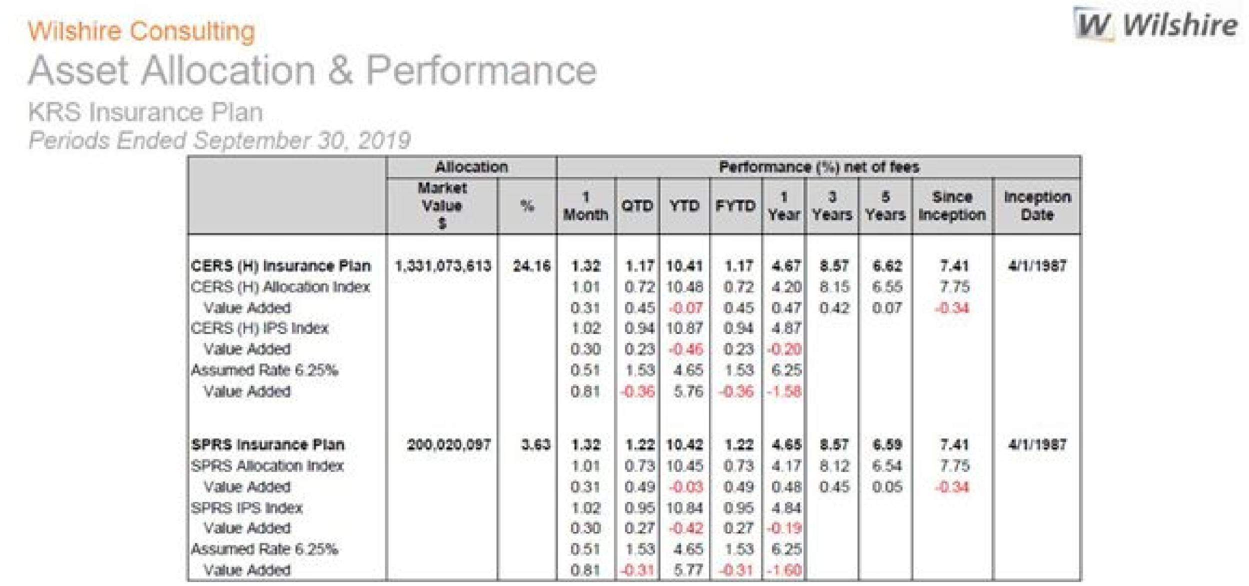
Asset Allocation & Performance

KRS Insurance Plan

Periods Ended September 30, 2019

	Allocation		Performance (%) net of fees								
	Market Value $	%	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
KRS Insurance Plan	**5,510,308,995**	**100.00**	**1.31**	**1.15**	**10.46**	**1.15**	**4.55**	**8.42**	**6.48**	**7.39**	**4/1/1987**
KRS Allocation Index			1.01	0.67	10.49	0.67	4.07	8.07	6.64	7.76	
Value Added			0.30	0.48	-0.03	0.48	0.48	0.35	-0.16	-0.37	
KRS IPS Index			1.02	0.93	10.81	0.93	4.82				
Value Added			0.29	0.22	-0.35	0.22	-0.27				
KERS Insurance Plan	**950,161,451**	**17.24**	**1.22**	**0.90**	**10.37**	**0.90**	**3.66**	**7.71**	**5.91**	**7.28**	**4/1/1987**
KERS Allocation Index			1.00	0.49	10.52	0.49	3.52	7.72	6.30	7.71	
Value Added			0.22	0.41	-0.15	0.41	0.14	-0.01	-0.39	-0.43	
KERS IPS Index			0.95	0.82	10.35	0.82	4.39				
Value Added			0.27	0.08	0.02	0.08	-0.73				
Assumed Rate 6.25%			0.51	1.53	4.65	1.53	6.25				
Value Added			0.71	-0.63	5.72	-0.63	-2.59				
KERS (H) Insurance Plan	**528,254,363**	**9.59**	**1.31**	**1.10**	**10.37**	**1.10**	**4.50**	**8.35**	**6.39**	**7.38**	**4/1/1987**
KERS (H) Allocation Index			0.99	0.68	10.34	0.68	4.07	8.07	6.51	7.75	
Value Added			0.32	0.42	0.03	0.42	0.43	0.28	-0.12	-0.37	
KERS (H) IPS Index			1.00	0.90	10.73	0.90	4.74				
Value Added			0.31	0.20	-0.36	0.20	-0.24				
Assumed Rate 6.25%			0.51	1.53	4.65	1.53	6.25				
Value Added			0.80	-0.43	5.72	-0.43	-1.75				
CERS Insurance Plan	**2,500,799,484**	**45.38**	**1.31**	**1.18**	**10.39**	**1.18**	**4.64**	**8.51**	**6.55**	**7.40**	**4/1/1987**
CERS Allocation Index			1.02	0.74	10.49	0.74	4.21	8.15	6.55	7.75	
Value Added			0.29	0.44	-0.10	0.44	0.43	0.36	0.00	-0.35	
CERS IPS Index			1.03	0.96	10.89	0.96	4.88				
Value Added			0.28	0.22	-0.50	0.22	-0.24				
Assumed Rate 6.25%			0.51	1.53	4.65	1.53	6.25				
Value Added			0.80	-0.35	5.74	-0.35	-1.61				

Performance – Insurance Cont.



Wilshire Consulting

Asset Allocation & Performance

KRS Insurance Plan

Periods Ended September 30, 2019

	Allocation		Performance (%) net of fees								
	Market Value $	%	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
CERS (H) Insurance Plan	**1,331,073,613**	**24.16**	**1.32**	**1.17**	**10.41**	**1.17**	**4.67**	**8.57**	**6.62**	**7.41**	**4/1/1987**
CERS (H) Allocation Index			1.01	0.72	10.48	0.72	4.20	8.15	6.55	7.75	
Value Added			0.31	0.45	-0.07	0.45	0.47	0.42	0.07	-0.34	
CERS (H) IPS Index			1.02	0.94	10.87	0.94	4.87				
Value Added			0.30	0.23	-0.46	0.23	-0.20				
Assumed Rate 6.25%			0.51	1.53	4.65	1.53	6.25				
Value Added			0.81	-0.36	5.76	-0.36	-1.58				
SPRS Insurance Plan	**200,020,097**	**3.63**	**1.32**	**1.22**	**10.42**	**1.22**	**4.65**	**8.57**	**6.59**	**7.41**	**4/1/1987**
SPRS Allocation Index			1.01	0.73	10.45	0.73	4.17	8.12	6.54	7.75	
Value Added			0.31	0.49	-0.03	0.49	0.48	0.45	0.05	-0.34	
SPRS IPS Index			1.02	0.95	10.84	0.95	4.84				
Value Added			0.30	0.27	-0.42	0.27	-0.19				
Assumed Rate 6.25%			0.51	1.53	4.65	1.53	6.25				
Value Added			0.81	-0.31	5.77	-0.31	-1.60				

Investment Guideline Waivers

The Investment Committee granted 3 guideline waivers at the February 6th meeting and agreed to review each of these waivers at all subsequent meetings. Two of these waivers are still in effect:

1. Staff was granted a waiver of the requirement that each of our external investment managers should be visited annually on-site by KRS staff.
2. Staff was granted a waiver of the requirement to rebalance assets within the Absolute Return, Real Estate, and Fixed Income asset classes as the transition to our new asset allocation policy is ongoing, and staff has not found any compelling investment opportunities within the Absolute Return and Real Return asset classes.

KENTUCKY RETIREMENT SYSTEMS
David L. Eager, Executive Director
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To: Kentucky Retirement Systems Board of Trustees

From: John E. Chilton, CPA, Chair
Audit Committee of the Board of Trustees

Kristen N. Coffey, CICA KNC
Division Director, Internal Audit Administration

Date: November 14, 2019

Subject: November 7, 2019 Audit Committee Meeting

The Audit Committee held a regularly scheduled meeting on November 7, 2019. The purpose of the meeting was to review and discuss the following items:

1. **Items with Requested Board Action**
   a. Mr. Surratt presented 13 requests for Hazardous Position Classifications. **The Audit Committee approved the requested positions.**

   b. Representatives from Dean Dorton presented the audit results for the fiscal year ended June 30, 2019, including the GASB 67 and 74 reports. **The Audit Committee approved the audit and related GASB reports, pending adding clarification related to the differences used in the calculations of Notes Land M and minor grammatical and formatting changes.**

   c. Ms. Adkins presented the new Waiver Policy pertaining to employer penalty waivers. **The Audit Committee approved the Waiver Policy, pending the addition of clarification related to employer training.**

   d. Ms. Coffey presented the updated Board Election Policy and new Administrative Regulation pertaining to the option for electronic balloting for Trustee elections. **The Audit Committee approved the Administrative Regulation as presented. The Audit Committee requested some additions to the Board Election Policy. These additions will be made and the Policy will be presented to the Audit Committee for approval at the February 2020 meeting.**

RECOMMENDATION: The Audit Committee requests the Board of Trustee ratify the actions taken by the Audit Committee

2. Other Items Presented to the Audit Committee

a. The Audit Committee approved the following items:
   i. Purchase of Infrastructure and Application Security Assessment.
   ii. Dates for Calendar Year 2020 Audit Committee meetings.

b. The following Divisional reports were presented:
   i. Information Disclosure Incidents for 3rd quarter of calendar year 2019. There were five internal disclosures effecting five members. There were no external disclosures.
   ii. Ms. Adkins presented the following items:
      1. Quarterly financial statements, including cash flows and administrative expenses, for the quarter ended September 30, 2019.
      2. Outstanding invoices – the largest outstanding invoice amounts related to pension spiking and standard sick leave. Kentucky State Police have the largest outstanding balance, which totals $5,866,490.
   iii. Ms. Davis presented the following items:
      1. Update on the fiscal year 2019 Comprehensive Annual Financial Report.
      2. KRS draft response to the GFOA CAFR Letter for June 30, 2018.

c. The following Internal Audit reports were discussed:
   i. Mr. Crawford presented the following items:
      1. Investment Compliance reports for the quarter ended September 30, 2019.
      2. Update on Investment Manager Onboarding Process.
   ii. Ms. Coffey presented the following items:
      1. Internal Audit budget - currently, the Division of Internal Audit Administration is on track to be on budget for fiscal year 2020.
      2. Anonymous Tips - currently, there are nine cases being actively investigated, including one new case.
      3. Update on procurement of Trustee Election Services.
      4. Status of Current Audits – currently, the Division of Internal Audit Administration is working on 15 projects. One draft report has been issued since the last Board meeting. The results of that audit have not yet been presented to the Audit Committee.

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8.1

To: Board of Trustees
From: D'Juan Surratt
Date: 11/14/2019
Subject: Hazardous Position Classification

AGENCIES ARE ASKING FOR HAZARDOUS DUTY COVERAGE FOR THE FOLLOWING POSITIONS:

Agency	Position	Effective Date
Fern Creek Fire Protection District	EMT	12/1/2019
Fern Creek Fire Protection District	Paramedic	12/1/2019
Fern Creek Fire Protection District	Paramedic/Support Supervisor	10/1/2019
Lakeview Crestview Hills Police Department	Police Lieutenant Colonel	12/1/2019
Alexandria Fire District	Lieutenant	9/1/2019
Alexandria Fire District	Captain	9/1/2019
Alexandria Fire District	Fire Marshall	9/1/2019
Alexandria Fire District	Assistant Chief	9/1/2019
City of Ashland	Fire Engineer	2/1/2019
City of Monticello	Police Captain	1/1/2020
City of Monticello	Police Lieutenant	1/1/2020
City of Owenton	Police Officer 1	12/1/2019
Kentucky Department of Fish & Wildlife	Conservation Master Officer	07/01/2019

Kentucky Retirement Systems has reviewed the above requests and feel that these positions meet statutory guidelines for Hazardous coverage. Position Questionnaires and Job Descriptions are attached.

The City of Ashland has asked for an effective date of 2/1/2019 on their Fire Engineer position as the agency had placed two employees in that position in February 2019. These employees had participation dates prior to 9/1/2008. The Fire Engineer position is currently only approved for employees with a participation date of 9/1/2008 or after.

The Kentucky Department of Fish & Wildlife has Conservation Officer I & II positions already approved as hazardous. The Conservation Master Officer position was created to retain Conservation Officer II employees who have no interest in supervision but allows them to have more duties at a higher salary.

[Type text]

61.592 Retirement of persons working in hazardous positions.

(1) (a) "Hazardous position" for employees participating in the Kentucky Employees Retirement System, and for employees who begin participating in the County Employees Retirement System before September 1, 2008, means:

1. Any position whose principal duties involve active law enforcement, including the positions of probation and parole officer and Commonwealth detective, active fire suppression or prevention, or other positions, including, but not limited to, pilots of the Transportation Cabinet and paramedics and emergency medical technicians, with duties that require frequent exposure to a high degree of danger or peril and also require a high degree of physical conditioning;
2. Positions in the Department of Corrections in state correctional institutions and the Kentucky Correctional Psychiatric Center with duties that regularly and routinely require face-to-face contact with inmates; and
3. Positions of employees who elect coverage under KRS 196.167(3)(b)2. and who continue to provide educational services and support to inmates as a Department of Corrections employee.

(b) "Hazardous position" for employees who begin participating in the County Employees Retirement System on or after September 1, 2008, means police officers and firefighters as defined in KRS 61.315(1), paramedics, correctional officers with duties that routinely and regularly require face-to-face contact with inmates, and emergency medical technicians if:

1. The employee's duties require frequent exposure to a high degree of danger or peril and a high degree of physical conditioning; and
2. The employee's duties are not primarily clerical or administrative.

(c) The effective date of participation under hazardous duty coverage for positions in the Department of Alcoholic Beverage Control shall be April 1, 1998. The employer and employee contributions shall be paid by the employer and forwarded to the retirement system for the period not previously reported.

(2) (a) Each employer may request of the board hazardous duty coverage for those positions as defined in subsection (1) of this section. Upon request, each employer shall certify to the system, in the manner prescribed by the board, the names of all employees working in a hazardous position as defined in subsection (1) of this section for which coverage is requested. The certification of the employer shall bear the approval of the agent or agency responsible for the budget of the department or county indicating that the required employer contributions have been provided for in the budget of the employing department or county. The system shall determine whether the employees whose names have been certified by the employer are working in positions meeting the definition of a hazardous position as provided by subsection (1) of this section. This process shall not be required for employees who elect coverage under KRS 196.167(3)(b)2.

61.315 Benefits payable on death of certain peace officers, firefighters, and members of a state National Guard or Reserve component-- Administrative regulations -- Funds allotted to a self-insuring account.

(1) As used in this section, "police officer" means every paid police officer, sheriff, or deputy sheriff, corrections employee with the power of a peace officer pursuant to KRS 196.037, any auxiliary police officer appointed pursuant to KRS 95.445, or any citation or safety officer appointed pursuant to KRS 83A.087 and 83A.088, elected to office, or employed by any county, airport board created pursuant to KRS Chapter 183, city, or by the state; "firefighter" means every paid firefighter or volunteer firefighter who is employed by or volunteers his or her services to the state, airport board created pursuant to KRS Chapter 183, any county, city, fire district, or any other organized fire department recognized, pursuant to KRS 95A.262, as a fire department operated and maintained on a nonprofit basis in the interest of the health and safety of the inhabitants of the Commonwealth and shall include qualified civilian firefighters employed at Kentucky-based military installations.

(2) The spouse of any police officer, sheriff, deputy sheriff, corrections employee with the power of a peace officer pursuant to KRS 196.037, any auxiliary police officer appointed pursuant to KRS 95.445, or any citation or safety officer appointed pursuant to KRS 83A.087 and 83A.088, firefighter, or member of the Kentucky National Guard on state active duty pursuant to KRS 38.030, or a member of a state National Guard or a Reserve component on federal active duty who names Kentucky as home of record for military purposes, whose death occurs on or after July 1, 2002, as a direct result of an act in the line of duty shall receive a lump-sum payment of eighty thousand dollars ($80,000) if there are no surviving children, which sum shall be paid by the State Treasurer from the general expenditure fund of the State Treasury. If there are surviving children and a surviving spouse, the payment shall be apportioned equally among the surviving children and the spouse. If there is no surviving spouse, the payment shall be made to the surviving children, eighteen (18) or more years of age. For surviving children less than eighteen (18) years of age, the State Treasurer shall:

(a) Pay thirty-five thousand dollars ($35,000) to the surviving children; and

(b) Hold forty-five thousand dollars ($45,000) in trust divided into equal accounts at appropriate interest rates for each surviving child until the child reaches the age of eighteen (18) years.

If a child dies before reaching the age of eighteen (18) years, his or her account shall be paid to his or her estate. If there are no surviving children, the payment shall be made to any parents of the deceased.

(3) The Commission on Fire Protection Personnel Standards and Education shall be authorized to promulgate administrative regulations establishing criteria and procedures applicable to the administration of this section as it pertains to both paid and volunteer firefighters, including but not limited to defining when a firefighter has died in line of duty. Administrative hearings promulgated by administrative

regulation under authority of this subsection shall be conducted in accordance with KRS Chapter 13B.

(4) The Justice and Public Safety Cabinet may promulgate administrative regulations establishing criteria and procedures applicable to the administration of this section as it pertains to police officers, including but not limited to defining when a police officer has died in line of duty. Administrative hearings promulgated by administrative regulation under authority of this subsection shall be conducted in accordance with KRS Chapter 13B.

(5) The Department of Corrections shall promulgate administrative regulations establishing the criteria and procedures applicable to the administration of this section as it pertains to correctional employees, including but not limited to defining which employees qualify for coverage and which circumstances constitute death in the line of duty.

(6) The benefits payable under this section shall be in addition to any benefits now or hereafter prescribed under any police, sheriff, firefighter's, volunteer firefighter's, or National Guard or Reserve retirement or benefit fund established by the federal government or by any state, county, or any municipality.

(7) Any funds appropriated for the purpose of paying the death benefits described in subsection (2) of this section shall be allotted to a self-insuring account. These funds shall not be used for the purpose of purchasing insurance.

Effective: June 26, 2007

History: Amended 2007 Ky. Acts ch. 85, sec. 128, effective June 26, 2007. -- Amended 2006 Ky. Acts ch. 252, Pt. XXVIII, sec. 12, effective April 25, 2006. -- Amended 2002 Ky. Acts ch. 289, sec. 1, effective July 15, 2002. -- Amended 1996 Ky. Acts ch. 117, sec. 1, effective July 15, 1996; and ch. 318, sec. 28, effective July 15, 1996. -- Amended 1992 Ky. Acts ch. 48, sec. 3, effective July 14, 1992; ch. 294, sec. 1, effective April 9, 1992; ch. 307, sec. 10, effective April 9, 1992; and ch. 381, sec. 8, effective July 14, 1992. -- Amended 1988 Ky. Acts ch. 225, sec. 26, effective July 15, 1988. -- Amended 1986 Ky. Acts ch. 135, sec. 1, effective July 15, 1986. -- Amended 1984 Ky. Acts ch. 247, sec. 1, effective July 13, 1984. -- Amended 1982 Ky. Acts ch. 250, sec. 1, effective July 15, 1982. -- Amended 1980 Ky. Acts ch. 344, sec. 1, effective July 15, 1980. -- Amended 1978 Ky. Acts ch. 164, sec. 4, effective June 17, 1978. -- Amended 1976 Ky. Acts ch. 35, sec. 1. -- Created 1972 Ky. Acts ch. 8, sec. 1.

Legislative Research Commission Note (4/25/2006). 2006 Ky. Acts ch. 252, Pt. XXVIII, sec. 17, provides that the amendments made to subsections (2) and (6) of this section "shall apply retroactively to July 1, 2002."

Legislative Research Commission Note (1988). Although this section was included in 1988 Acts ch. 225, sec. 26, the amended language was deleted by committee amendment.

KENTUCKY RETIREMENT SYSTEMS
COMBINING STATEMENTS OF FIDUCIARY NET POSITION
PENSION FUNDS
As of September 30, 2019
(Unaudited)(In Whole Dollars)

	KERS	KHAZ	CERS	CHAZ	SPRS	2020	2019		
ASSETS									
Cash and Short-term Investments									
Cash Deposits	$ 2,430,494	$ 65,030	$ 1,580,681	$ 929,965	$ 180,530	$ 5,186,701	$ 2,654,683	95%	1
Short-term Investments	$ 260,543,114	$ 26,744,160	$ 232,293,542	$ 90,390,209	$ 21,579,153	$ 631,550,178	$ 784,884,474	-20%	2
Total Cash and Short-term Investments	$ 262,973,608	$ 26,809,190	$ 233,874,223	$ 91,320,175	$ 21,759,683	$ 636,736,879	$ 787,539,158		
RECEIVABLES									
Accounts Receivable	$ 93,189,970	$ 8,482,532	$ 50,892,827	$ 17,726,442	$ 10,223,308	$ 180,515,080	$ 196,500,982	-8%	
Accounts Receivable - Investments	$ 28,522,672	$ 8,545,642	$ 82,835,023	$ 28,127,496	$ 4,126,623	$ 152,157,456	$ 204,308,441	-26%	3
Accounts - Alternate Participation	$ -	$ -	$ -	$ -	$ -	$ -	$ 78,757		
Total Receivables	$ 121,712,643	$ 17,028,174	$ 133,727,850	$ 45,853,938	$ 14,349,931	$ 332,672,535	$ 400,888,180		
INVESTMENTS, AT FAIR VALUE									
Fixed Income	$ 508,342,109	$ 134,097,512	$ 1,242,580,200	$ 424,693,314	$ 72,035,497	$ 2,381,748,632	$ 1,838,046,787	30%	4
Public Equities	$ 705,338,310	$ 261,009,098	$ 2,803,041,702	$ 936,234,038	$ 90,947,359	$ 4,796,570,508	$ 4,779,636,160	0%	
Specialty Credit	$ 301,454,490	$ 109,769,183	$ 1,166,380,057	$ 385,961,909	$ 43,169,481	$ 2,006,735,121	$ 1,850,710,980	8%	
Private Equities	$ 197,002,975	$ 60,191,460	$ 654,986,610	$ 223,158,866	$ 18,504,157	$ 1,153,844,068	$ 1,238,149,105	-7%	
Absolute Return	$ 36,644,232	$ 9,560,694	$ 114,031,729	$ 36,121,150	$ 3,855,449	$ 200,213,255	$ 514,673,101	-61%	5
Real Estate	$ 93,180,830	$ 29,407,243	$ 312,050,611	$ 99,912,313	$ 12,222,764	$ 546,773,760	$ 434,836,648	26%	6
Real Return	$ 164,325,994	$ 57,360,646	$ 634,489,711	$ 216,168,498	$ 22,747,497	$ 1,095,092,347	$ 1,047,088,089	5%	
Opportunistic	$ 23,246,462	$ 7,207,078	$ 79,498,414	$ 26,280,944	$ 2,871,391	$ 139,104,289	$ 20,642,147	574%	7
Derivatives	$ 197,533	$ 77,638	$ 832,876	$ 280,320	$ 36,408	$ 1,424,775	$ (9,164,813)	-116%	8
Total Investments, at Fair Value	$ 2,029,732,934	$ 668,680,553	$ 7,007,891,908	$ 2,348,811,354	$ 266,390,004	$ 12,321,506,754	$ 11,714,618,206		
CAPITAL/INTANGIBLE ASSETS									
Capital Assets	$ 929,074	$ 91,375	$ 1,700,704	$ 153,235	$ 11,003	$ 2,885,391	$ 2,885,391		
Intangible Assets	$ 5,919,584	$ 493,581	$ 9,960,922	$ 826,734	$ 100,005	$ 17,300,826	$ 17,300,826		
Accumulated Depreciation	$ (890,327)	$ (87,349)	$ (1,630,512)	$ (146,783)	$ (10,983)	$ (2,765,954)	$ (2,672,101)		
Accumulated Amortization	$ (5,090,805)	$ (429,575)	$ (8,649,864)	$ (734,606)	$ (103,213)	$ (15,008,062)	$ (13,517,833)		
Total Capital Assets	$ 867,526	$ 68,033	$ 1,381,251	$ 98,580	$ (3,189)	$ 2,412,201	$ 3,996,283	-40%	9
Total Assets	$ 2,415,286,711	$ 712,585,950	$ 7,376,875,232	$ 2,486,084,047	$ 302,496,429	$ 13,293,328,369	$ 12,907,041,826		
LIABILITIES									
Accounts Payable	$ 3,005,616	$ 2,064,821	$ 3,541,288	$ 1,328,740	$ 621,762	$ 10,562,227	$ 12,981,592	-19%	10
Investment Accounts Payable	$ 41,036,326	$ 11,538,699	$ 107,773,902	$ 36,835,647	$ 5,947,366	$ 203,131,940	$ 213,574,500	-5%	
Total Liabilities	$ 44,041,942	$ 13,603,520	$ 111,315,190	$ 38,164,387	$ 6,569,128	$ 213,694,167	$ 226,556,093		
Total Fiduciary Net Position Restricted for Pensions	$ 2,371,244,769	$ 698,982,430	$ 7,265,560,042	$ 2,447,919,660	$ 295,927,301	$ 13,079,634,202	$ 12,680,485,734		

NOTE - Variance Explanation

1 *Variance is a result of continuous fluctuation of deposits and transactions that flow through the cash account. An effort is made to have minimal balances on hand at month end.*
2 *Short Term Investments is primarily comprised of the cash on hand with the custodial bank along with any small amounts of cash managers and brokers may have; therefore, the variance is driven by cash flow.*
3 *Variance is a result of transaction activity which is based on each individual manager.*
4 *The increase in Core Fixed Income is due to the funding of a new manager.*
5 *The decline in Absolute Return is due to the continued redemptions of multiple managers.*
6 *The increase in Real Estate is due to additional funds invested in current managers.*
7 *The increase in Opportunistic is due to additional funds invested in current managers.*
8 *Derivatives include currency forwards/futures as permitted by KRS investment policy. Derivative income increases as the hedging investment offsets the strong USD.*
9 *The decrease in total Fixed Assets is due to the increase in the amortization of the fixed assets.*
10 *The decrease in Accounts Payable is due to an effort to resolve outstanding employer invoices.*

KENTUCKY RETIREMENT SYSTEMS
COMBINING STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION
PENSION FUNDS
For the Quarter Ended September 30, 2019
(Unaudited)(In Whole Dollars)

	KERS	KHAZ	CERS	CHAZ	SPRS	2020	2019		
ADDITIONS									
Member Contributions	$ 25,538,849	$ 4,249,479	$ 37,542,135	$ 15,510,245	$ 1,314,228	$ 84,154,936	$ 79,048,843	6%	
Employer Contributions	$ 284,014,734	$ 17,086,574	$ 104,773,960	$ 42,317,659	$ 17,970,010	$ 466,162,936	$ 445,174,432	5%	
General Fund Appropriations					$ 1,086,200	$ 1,086,200	$ 1,086,200	0%	
Pension Spiking Contributions	$ (15,454)	$ 2,506	$ 38,821	$ 59,561	$ 934	$ 86,367	$ 295,416	-71%	1
Northern Trust Settlement						$ -	$ 100,888		
Health Insurance Contributions (HB1)	$ 4,915	$ 697	$ 5,785	$ 724		$ 12,121	$ 4,784,842	-100%	2
Total Contributions	$ 309,543,044	$ 21,339,255	$ 142,360,701	$ 57,888,189	$ 20,371,372	$ 551,502,561	$ 530,490,620		
INVESTMENT INCOME									
From Investing Activities									
Net Appreciation in FV of Investments	$ 19,327,159	$ 5,164,332	$ 50,882,507	$ 16,631,955	$ 2,399,638	$ 94,405,591	$ 231,174,653	-59%	3
Interest/Dividends	$ 15,768,562	$ 5,033,727	$ 52,438,320	$ 17,629,064	$ 2,017,736	$ 92,887,409	$ 68,559,927	35%	4
Total Investing Activities Income	$ 35,095,721	$ 10,198,059	$ 103,320,827	$ 34,261,019	$ 4,417,374	$ 187,293,000	$ 299,734,581		
Investment Expense	$ 1,825,855	$ 858,342	$ 9,403,656	$ 3,082,650	$ 316,660	$ 15,487,161	$ 15,289,195	1%	
Performance Fee/Carried Interest	$ 2,629,142	$ 650,999	$ 7,093,811	$ 2,322,627	$ 272,331	$ 12,968,911	$ 5,511,421	135%	5
Net Income from Investing Activities	$ 30,640,724	$ 8,688,718	$ 86,823,361	$ 28,855,742	$ 3,828,382	$ 158,836,928	$ 278,933,965		
From Securities Lending Activities									
Securities Lending Income	$ 380,049	$ 135,731	$ 1,434,331	$ 481,826	$ 55,339	$ 2,487,277	$ 2,342,097		
Securities Lending Expense									
Securities Lending Borrower Rebates	$ 257,016	$ 91,127	$ 957,561	$ 321,813	$ 38,133	$ 1,665,650	$ 1,702,010		
Securities Lending Agent Fee	$ 14,499	$ 5,122	$ 54,407	$ 18,293	$ 2,033	$ 94,354	$ 95,476		
Net Income from Securities Lending	$ 108,534	$ 39,483	$ 422,363	$ 141,720	$ 15,172	$ 727,272	$ 544,611	34%	6
Total Investment Income	$ 30,749,259	$ 8,728,201	$ 87,245,724	$ 28,997,462	$ 3,843,555	$ 159,564,201	$ 279,478,576		
Total Additions	$ 340,292,302	$ 30,067,456	$ 229,606,425	$ 86,885,652	$ 24,214,927	$ 711,066,762	$ 809,969,196		
DEDUCTIONS									
Benefit Payments	$ 249,245,256	$ 17,765,856	$ 197,285,549	$ 66,921,849	$ 15,469,206	$ 546,687,715	$ 528,102,215	4%	
Refunds	$ 3,698,292	$ 926,183	$ 4,596,439	$ 1,205,023	$ -	$ 10,425,937	$ 8,058,750	29%	7
Administrative Expenses	$ 2,728,783	$ 270,292	$ 5,139,194	$ 451,928	$ 60,972	$ 8,651,168	$ 9,179,094	-6%	
Total Deductions	$ 255,672,331	$ 18,962,330	$ 207,021,182	$ 68,578,800	$ 15,530,177	$ 565,764,820	$ 545,340,059		
Net Increase (Decrease) in Fiduciary Net Position	$ 84,619,971	$ 11,105,126	$ 22,585,243	$ 18,306,851	$ 8,684,750	$ 145,301,942	$ 264,629,137		
FIDUCIARY NET POSITION HELD IN TRUST FOR PENSION BENEFITS									
Beginning of Period	$ 2,286,624,798	$ 687,877,305	$ 7,242,974,797	$ 2,429,612,808	$ 287,242,561	$ 12,934,332,269	$ 12,415,856,606		
End of Period	$ 2,371,244,769	$ 698,982,431	$ 7,265,560,040	$ 2,447,919,660	$ 295,927,311	$ 13,079,634,211	$ 12,680,485,743		

NOTE - Variance Explanation

1 *Pension Spiking contributions decreased due to a change in statute. Pension spiking is now the member's responsibility.*
2 *Health Insurance Contributions will continue to decrease in the Pension Funds, as they are now qualified in the Insurance Fund.*
3 *Net Appreciation is down due to unrealized losses within Public Equity as compared to unrealized gains in Q1 FY19.*
4 *Interest and Dividends are up as a result of increase interest from Core Fixed Income and Partnership Income from Private Equity.*
5 *The unusual variance in management fees is as result of inaccurate coding of performance fees in Q1 FY19. Some of the performance fees were coded as management fees. This was corrected later in the year. The overall increase in fees is about 35% which equates to $3.4 million. The increase in fees is driven by more overall dollars invested and an increase in carried interest from the Private Equity and Real Estate asset classes. The Real Estate asset class has received additional funding resulting in additional fees.*
6 *Securities Lending Activity is driven by the demand of certain securities in the market, KRS' collateral amount depends on the demand for the securities KRS holds.*
7 *Increase in refunds taken by members not eligible for retirement benefit.*

KENTUCKY RETIREMENT SYSTEMS
COMBINING STATEMENTS OF FIDUCIARY NET POSITION
INSURANCE FUNDS
As of September 30, 2019
(Unaudited)(In Whole Dollars)

	KERS	KHAZ	CERS	CHAZ	SPRS	2020	2019		
ASSETS									
Cash and Short-Term Investments									
Cash Deposits	$ 132,524	$ 21,218	$ 258,586	$ 22,593	$ 18,608	$ 453,528	$ 874,440	-48%	1
Short-term Investments	$ 17,738,260	$ 13,306,702	$ 77,331,442	$ 43,655,438	$ 5,515,847	$ 157,547,690	$ 290,606,889	-46%	2
Total Cash and Short-term Investments	$ 17,870,784	$ 13,327,920	$ 77,590,028	$ 43,678,031	$ 5,534,455	$ 158,001,218	$ 291,481,329		
RECEIVABLES									
Accounts Receivable	$ 16,876,265	$ 820,647	$ 13,090,469	$ 4,802,241	$ 1,273,700	$ 36,863,322	$ 35,620,596	3%	
Investment Accounts Receivable	$ 10,714,854	$ 4,935,569	$ 24,094,065	$ 12,153,469	$ 1,905,496	$ 53,803,454	$ 79,232,279	-32%	3
Total Receivables	$ 27,591,119	$ 5,756,216	$ 37,184,534	$ 16,955,710	$ 3,179,196	$ 90,666,776	$ 114,852,876		
INVESTMENTS, AT FAIR VALUE									
Fixed Income	$ 201,345,030	$ 90,585,416	$ 456,331,724	$ 226,397,770	$ 36,097,281	$ 1,010,757,222	$ 732,134,485	38%	4
Public Equities	$ 397,656,021	$ 206,256,845	$ 949,592,491	$ 509,845,719	$ 75,415,561	$ 2,138,766,637	$ 2,110,563,754	1%	
Specialty Credit	$ 154,441,333	$ 83,895,116	$ 365,173,189	$ 194,135,367	$ 29,752,585	$ 827,397,591	$ 735,179,161	13%	5
Private Equities	$ 51,827,601	$ 51,556,975	$ 273,231,643	$ 154,109,745	$ 23,368,966	$ 554,094,931	$ 548,173,341	1%	
Absolute Return	$ 12,942,679	$ 8,594,208	$ 36,740,929	$ 20,584,732	$ 3,222,875	$ 82,085,422	$ 211,992,882	-61%	6
Real Estate	$ 32,680,534	$ 24,013,366	$ 104,173,953	$ 57,075,065	$ 9,171,303	$ 227,114,222	$ 177,805,606	28%	7
Real Return	$ 75,285,355	$ 44,966,127	$ 217,087,788	$ 113,007,933	$ 15,703,721	$ 466,050,924	$ 443,717,246	5%	
Opportunistic	$ 11,476,532	$ 7,134,387	$ 32,099,765	$ 17,487,576	$ 2,634,500	$ 70,832,760	$ 10,511,108	574%	8
Derivatives	$ 112,583	$ 63,512	$ 297,664	$ 156,357	$ 23,788	$ 653,904	$ (11,493,433)	-106%	9
Total Investments, at Fair Value	$ 937,767,669	$ 517,065,952	$ 2,434,729,147	$ 1,292,800,265	$ 195,390,581	$ 5,377,753,614	$ 4,958,584,151		
Total Assets	$ 983,229,572	$ 536,150,088	$ 2,549,503,709	$ 1,353,434,006	$ 204,104,232	$ 5,626,421,608	$ 5,364,918,355		
LIABILITIES									
Accounts Payable	$ 225,113	$ 9,804	$ 225,018	$ 39,100	$ 2,925	$ 501,960	$ 1,085,074	-54%	10
Investment Accounts Payable	$ 16,059,333	$ 7,053,862	$ 35,355,172	$ 17,535,561	$ 2,791,827	$ 78,795,754	$ 85,804,806	-8%	
Total Liabilities	$ 16,284,446	$ 7,063,665	$ 35,580,190	$ 17,574,661	$ 2,794,752	$ 79,297,713	$ 86,889,880		
Total Fiduciary Net Position Restricted for Insurance	$ 966,945,127	$ 529,086,423	$ 2,513,923,519	$ 1,335,859,345	$ 201,309,480	$ 5,547,123,895	$ 5,278,028,475		

NOTE - Variance Explanation

1 Variance is a result of continuous fluctuation of deposits and transactions that flow through the cash account. An effort is made to have minimal balances on hand at month end.

2 Short Term Investments is primarily comprised of the cash that is on hand with the custodial bank along with any small amounts of cash managers and brokers may have; therefore, the variance is driven by cash flow.

3 Variance is a result of transaction activity which is based on each individual manager.

4 The increase in Core Fixed Income is due to the funding of a new manager.

5 The increase in Specialty Credit is due to additional funds invested in current managers.

6 The decline in Absolute Return is due to the continued redemptions of multiple managers.

7 The increase in Real Estate is due to additional funds invested in current managers.

8 The increase in Opportunistic is due to additional funds invested in current managers

9 Derivatives include currency forwards/futures as permitted by KRS investment policy. Derivative income increases as the hedging investment offsets the strong USD.

10 The decrease in Accounts Payable is due to an effort to resolve outstanding employer invoices.

KENTUCKY RETIREMENT SYSTEMS
COMBINING STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION
INSURANCE FUNDS
For the Quarter Ended September 30, 2019
(Unaudited)(In Whole Dollars)

	KERS	KHAZ	CERS	CHAZ	SPRS	2020	2019		
ADDITIONS									
Employer Contributions	$ 43,365,839	$ 1,043,642	$ 27,500,939	$ 15,495,347	$ 2,342,407	$ 89,748,173	$ 93,348,921	-4%	
Medicare Drug Reimbursement	$ 1,268	$ 101	$ 1,186	$ 44	$ 6	$ 2,605	$ 3,258	-20%	1
Insurance Premiums	$ 52,641	$ 1,085	$ 158,156	$ (1,260)	$ (1,827)	$ 208,795	$ 193,197	8%	
Retired Reemployed Healthcare	$ 1,092,703	$ 302,244	$ 1,700,949	$ 273,864	$ -	$ 3,369,760	$ 3,005,688	12%	2
Health Insurance Contributions (HB1)	$ 1,530,014	$ 245,775	$ 2,754,702	$ 670,151	$ 49,519	$ 5,250,160	$ -		3
Northern Trust Settlement	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,598		
Total Contributions	$ 46,042,465	$ 1,592,846	$ 32,115,931	$ 16,438,147	$ 2,390,104	$ 98,579,494	$ 96,572,662		
INVESTMENT INCOME									
From Investing Activities									
Net Appreciation in FV of Investments	$ 4,843,891	$ 2,859,356	$ 18,768,637	$ 8,896,665	$ 1,503,137	$ 36,871,686	$ 90,242,632	-59%	4
Interest/Dividends	$ 6,602,167	$ 3,605,385	$ 16,943,978	$ 8,973,867	$ 1,351,362	$ 37,476,760	$ 33,245,153	13%	5
Total From Investing Activities	$ 11,446,059	$ 6,464,741	$ 35,712,615	$ 17,870,532	$ 2,854,500	$ 74,348,446	$ 123,487,786		
Investment Expense	$ 886,943	$ 622,706	$ 3,246,109	$ 1,717,592	$ 254,704	$ 6,728,053	$ 8,073,072	-17%	6
Performance Fee	$ 622,732	$ 607,387	$ 3,255,391	$ 1,756,506	$ 274,251	$ 6,516,267	$ 1,718,646	279%	7
Net Income from Investing Activities	$ 9,936,384	$ 5,234,648	$ 29,211,115	$ 14,396,434	$ 2,325,545	$ 61,104,126	$ 113,696,068		
From Securities Lending									
Securities Lending Income	$ 199,392	$ 104,650	$ 486,861	$ 256,973	$ 38,957	$ 1,086,833	$ 941,988		
Securities Lending Expense									
Security Lending Borrower Rebates	$ 146,429	$ 76,509	$ 355,925	$ 187,896	$ 28,715	$ 795,474	$ 656,225		
Security Lending Agent Fees	$ 7,936	$ 4,216	$ 19,619	$ 10,350	$ 1,534	$ 43,655	$ 39,845		
Net Income from Securities Lending	$ 45,027	$ 23,924	$ 111,317	$ 58,727	$ 8,707	$ 247,703	$ 245,918	1%	
Total Net Income from Investments	$ 9,981,412	$ 5,258,572	$ 29,322,433	$ 14,455,161	$ 2,334,252	$ 61,351,830	$ 113,941,986		
Total Additions	$ 56,023,877	$ 6,851,418	$ 61,438,364	$ 30,893,308	$ 4,724,357	$ 159,931,323	$ 210,514,648		
DEDUCTIONS									
Healthcare Premiums Subsidies	$ 30,488,882	$ 4,814,553	$ 32,714,763	$ 19,668,127	$ 3,520,759	$ 91,207,083	$ 95,024,405	-4%	
Administrative Expense	$ 213,256	$ 29,405	$ 222,336	$ 109,308	$ 17,366	$ 591,672	$ 596,847	-1%	
Self Funded Healthcare Costs	$ 512,279	$ 29,124	$ 1,035,795	$ 65,469	$ 4,995	$ 1,647,662	$ 2,043,754	-19%	8
Total Deductions	$ 31,214,417	$ 4,873,082	$ 33,972,895	$ 19,842,904	$ 3,543,120	$ 93,446,418	$ 97,665,007		
Net Increase (Decrease) in Fiduciary Net Position	$ 24,809,460	$ 1,978,335	$ 27,465,469	$ 11,050,405	$ 1,181,236	$ 66,484,906	$ 112,849,641		
FIDUCIARY NET POSITION HELD IN TRUST FOR INSURANCE BENEFITS									
Beginning of Period	$ 942,135,657	$ 527,108,088	$ 2,486,458,049	$ 1,324,808,941	$ 200,128,245	$ 5,480,638,979	$ 5,165,178,825		
End of Period	$ 966,945,117	$ 529,086,423	$ 2,513,923,519	$ 1,335,859,345	$ 201,309,481	$ 5,547,123,885	$ 5,278,028,465		

NOTE - Variance Explanation

1 *Refunds received from UMR/Wausau for overpayments on self-funded claims continue to decrease in the first quarter of 2020.*

2 *Retired Reemployed Health Insurance contributions increased due to an increase in retired reemployed members reported.*

3 *Health Insurance Contributions will continue to increase, as they are now qualified in the Insurance Fund.*

4 *Net Appreciation is down due to unrealized losses within Public Equity as compared to unrealized gains in Q1 FY19.*

5 *Interest and Dividends are up as a result of increase interest from Core Fixed Income and Partnership Income from Private Equity.*

6 *The unusual variance in management fees is as result of inaccurate coding of performance fees in Q1 FY19. Some of the performance fees were coded as management fees. This was corrected later in the year. The overall increase in fees is about 35% which equates to $3.4 million. The increase in fees is driven by more overall dollars invested and an increase in carried interest from the Private Equity and Real Estate asset classes. The Real Estate asset class has received additional funding resulting in additional fees.*

8 *The decrease in Self Funded Healthcare costs is a result of an decrease in claims paid by Humana/billed to KRS.*

KRS ADMINISTRATIVE BUDGET 2019-20
FIRST QUARTER BUDGET-TO-ACTUAL ANALYSIS

		Fiscal 20			
Acc't #	Account Name	Budgeted	Actual Expenditures	Remaining	% Remaining
	PERSONNEL				
111	Salaries	$16,151,700	$4,057,599	$12,094,101	74.88%
113	Casual Labor	$0	$0	$0	0.00%
114	Wages (Per Diem)	$0	$0	$0	0.00%
115	Wages (Overtime)	$594,500	$76,465	$518,035	87.14%
119	Wages (Block 50)	$120,000	$4,725	$115,275	96.06%
120	Benefits	$0	$0	$0	0.00%
120	Miscellaneous	$0	$0	$0	0.00%
121	Emp Paid FICA	$1,200,000	$296,497	$903,503	75.29%
122	Emp Paid Retirement	$12,000,000	$3,258,760	$8,741,240	72.84%
123	Emp Paid Health Ins	$3,000,000	$726,727	$2,273,273	75.78%
124	Emp Paid Life Ins	$12,000	$1,003	$10,997	91.64%
125	Emp Paid HRA	$0	$0	$0	0.00%
126	Health Insurance Admin Fee	$18,100	$0	$18,100	100.00%
127	HRA Adm Fee	$0	$0	$0	0.00%
128	Emp Paid Sick Leave	$75,000	($97)	$75,097	100.13%
129	Adoption Assistance Benefit	$0	$0	$0	0.00%
111A	Escrow For Admin Fees	$0	($32,000)	($32,000)	0.00%
131	Workers Compensation	$50,400	$11,719	$38,681	76.75%
132	Unemployment	$10,000	$0	$10,000	100.00%
133	Tuition Assistance	$35,000	$3,973	$31,027	88.65%
133I	Investment Tuition Assistance	$5,000	$0	$5,000	100.00%
133T	Audit Tuition Assistance	$2,500	$0	$2,500	100.00%
135	Bonds	$3,000	$0	$3,000	100.00%
141	**LEGAL & AUDITING SERVICES**				
141A	Legal Hearing Officers	$350,000	$20,248	$329,752	94.21%
141B	Legal (Stoll, Keenon)	$1,200,000	$3,894	$1,196,106	99.68%
141C	Polsinelli Shugart	$100,000	$0	$100,000	100.00%
141D	Frost Brown	$120,000	$3,890	$116,110	96.76%
141E	Reinhart	$500,000	$9,065	$490,935	98.19%
141F	Ice Miller	$500,000	$71,887	$428,113	85.62%
141L	Legal Expense	$150,000	$11,385	$138,615	92.41%
142	Auditing	$360,000	$14,023	$345,977	96.10%
146	**CONSULTING SERVICES**				
146A	Medical Reviewers	$400,000	$29,558	$370,443	92.61%
146B	Medical Reports	$10,000	$0	$10,000	100.00%
146C	Medical Exams	$35,000	$0	$35,000	100.00%
146E	Escrow for Actuary Fees	$12,000	($16,000)	($4,000)	-33.33%
150	**CONTRACTUAL SERVICES**				
150C	Miscellaneous Contracts	$275,000	$7,051	$267,949	97.44%
150D	Health Consultant	$130,000	$0	$130,000	100.00%
150E	Banking	$0	$0	$0	0.00%
150F	Lexus Nexus	$0	$0	$0	0.00%
150G	Human Resources Consulting	$100,000	$6,767	$93,233	93.23%
150H	Health Insurance Adminstrative Expense	$0	$0	$0	0.00%
150I	Investment Consulting	$0	$0	$0	0.00%
150J	Pharmacy Claims TPA	$0	$0	$0	0.00%
150K	Medical Claims TPA	$0	$0	$0	0.00%
159	Actuarial Services	$780,000	$112,292	$667,708	85.60%
162	Facility Security Charges	$78,000	$1,039	$76,961	98.67%
193	Tuition Assistance	$5,000	$0	$5,000	100.00%
	PERSONNEL SUBTOTAL	**$38,382,200**	**$8,680,469**	**$29,605,731**	**77.13%**

KRS ADMINISTRATIVE BUDGET 2018-19
Fourth QUARTER BUDGET-TO-ACTUAL ANALYSIS

Acc't #	Account Name	Budgeted	Actual Expenditures	Remaining	% Remaining
	OPERATIONAL				
211	Natural Gas	$48,000	$1,197	$46,803	97.51%
212	Electric	$190,000	$44,565	$145,435	76.54%
221	Rent-NonState Building	$70,000	$16,261	$53,739	76.77%
222	Rent -State Owned Building	$759,400	$187,106	$572,294	75.36%
223	Equipment Rental	$15,000	$0	$15,000	100.00%
224	Copier Rental	$100,000	$13,438	$86,562	86.56%
226	Rental Carpool	$10,000	$3,452	$6,548	65.48%
232	Vehicle/Equip. Mainten.	$29,000	$0	$29,000	100.00%
241	Postage	$525,000	$50,552	$474,448	90.37%
242	Freight	$1,200	$0	$1,200	100.00%
251	Printing (State)	$12,000	$720	$11,280	94.00%
252	Printing (non-state)	$300,000	$17,681	$282,319	94.11%
254	Insurance	$250,000	$0	$250,000	100.00%
256	Garbage Collection	$20,000	$882	$19,118	95.59%
259	Conference Expense	$40,000	$11,840	$28,160	70.40%
259I	Conference Exp. Investment	$12,600	$0	$12,600	100.00%
259T	Conference Exp. Audit	$1,500	$0	$1,500	100.00%
300	MARS Usage	$84,000	$11,650	$72,350	86.13%
321	Office Supplies	$150,000	$24,549	$125,451	83.63%
331	Data Processing Supplies	$0	$0	$0	0.00%
343	Motor Fuels & Lubricants	$3,000	$0	$3,000	100.00%
346	Furniture & Office Equipment	$0	$0	$0	0.00%
361	Travel (In-State)	$75,000	$10,194	$64,806	86.41%
361I	Travel (In-State) Investment	$1,500	$0	$1,500	100.00%
361T	Travel (In-State) Audit	$500	$0	$500	100.00%
362	Travel (Out of State)	$20,000	$7,952	$12,048	60.24%
362I	Travel (Out of State) Invest	$50,000	$10,580	$39,420	78.84%
362T	Travel (Out of State) Audit	$2,500	$0	$2,500	100.00%
381	Dues & Subscriptions	$85,000	$13,739	$71,261	83.84%
381I	Dues & Subscriptions Invest	$15,000	$0	$15,000	100.00%
381T	Dues & Subscriptions Audit	$5,000	$0	$5,000	100.00%
399	Miscellaneous	$75,100	$764	$74,336	98.98%
399I	Miscellaneous Investment	$20,000	$0	$20,000	100.00%
399T	Miscellaneous Audit	$2,000	$0	$2,000	100.00%
601	Capital Outlay	$0	$0	$0	0.00%
802	COT Charges	$90,000	$2,500	$87,500	97.22%
814	Telephone - Wireless	$8,000	$1,115	$6,885	86.06%
815	Telephone - Other	$250,000	$21,699	$228,301	91.32%
847	Computer Equip./Software	$6,000,000	$490,802	$5,509,198	91.82%
847I	Comp. Equip./Software Invest	$0	$0	$0	0.00%
847T	Comp. Equip/Software Audit	$0	$0	$0	0.00%
	OPERATIONAL SUBTOTAL	**$9,320,300**	**$943,240**	**$8,377,060**	**89.88%**
	TOTALS	**$47,702,500**	**$9,623,709**	**$37,982,791**	**79.62%**

8.3

Kentucky Retirement Systems

Board Meeting

November 14, 2019

Cash Flow Trends

Pension Fund Cash Flows:

- All plans ended the quarter with a positive cash flow.
- Member contributions remained consistent with the prior year for all plans.
- Employer contributions increased due to additional contributions.
- Net Investment Income was up compared to prior year as a result of increase interest from Core Fixed Income and partnership income from Private Equity.
- Benefit payments had a slight increase across all plans.

Insurance Fund Cash Flows:

- All plans ended the quarter with a positive cash flow.
- Total Inflows increased for all plans as contributions are up and the addition of Health Insurance Contributions (HB 1) is now included in the Insurance Fund.
- Outflows remained relatively flat with a slight decline in some plans due to lower healthcare premiums than the prior year.

CASH FLOW – Pension Fund
(KERS Non-Haz, KERS Haz & SPRS)
September 30, 2019 (compared to September 30, 2018)
($ in millions)

	KERS NON-HAZARDOUS		KERS HAZARDOUS		SPRS	
Contributions	**FY19**	**FY20**	**FY19**	**FY20**	**FY19**	**FY20**
Member Contributions	$25.4	$26.1	$4.8	$4.3	$1.3	$1.4
Employer Contributions/Appropriations	248.8	302.0	11.8	19.9	10.2	14.6
Investment Income (Net of Expenses)	6.3	11.4	2.7	3.6	1.0	1.4
Total Cash Inflows	**280.5**	**339.5**	**19.3**	**27.8**	**12.5**	**17.4**
Benefit Payments/Refunds	247.6	252.9	17.5	18.7	15.1	15.5
Administrative Expenses	2.8	3.1	0.2	0.3	-	0.1
Total Cash Outflows	**250.4**	**256.0**	**17.7**	**19.0**	**15.1**	**15.6**
NET Cash Flow Before Gains/(Losses)	**30.1**	**83.5**	**1.6**	**8.8**	**(2.6)**	**1.8**
Realized Gain/Loss	7.5	20.2	4.4	6.9	1.3	2.7
NET CASH FLOW	**$37.6**	**$103.7**	**$6.0**	**$15.7**	**($1.3)**	**$4.5**

CASH FLOW – Pension Fund
(CERS-Haz and CERS-Haz)
September 30, 2019 (compared to September 30, 2018)
($ in millions)

	CERS NON-HAZARDOUS		CERS HAZARDOUS	
Contributions	**FY19**	**FY20**	**FY19**	**FY20**
Member Contributions	$41.2	$41.1	$16.0	$16.0
Employer Contributions	95.6	112.4	34.0	40.4
Investment Income (Net of Expenses)	28.7	36.4	9.7	12.4
Contribution Inflow	**165.5**	**189.9**	**59.7**	**68.8**
Benefit Payments/Refunds	191.9	201.9	63.9	68.1
Administrative Expenses	6.6	5.9	0.3	0.5
Contribution Outflow	**198.5**	**207.8**	**64.2**	**68.6**
NET Cash Flow Before Gains/(Losses)	**(33.0)**	**(17.9)**	**(4.5)**	**0.2**
Realized Gain/Loss	50.1	74.6	17.0	25.2
NET CASH FLOW	**$17.1**	**$56.7**	**$12.5**	**$25.4**

8.3

CASH FLOW – Insurance Fund
(KERS Non-Haz, KERS Haz & SPRS)
September 30, 2019 (compared to September 30, 2018)
($ in millions)

	KERS NON-HAZARDOUS		KERS HAZARDOUS		SPRS	
Contributions	**FY19**	**FY20**	**FY19**	**FY20**	**FY19**	**FY20**
Employer Contributions	$40.3	$43.4	$0.7	$1.0	$3.1	$3.5
Insurance Premiums	0.1	0.1	-	-	-	-
Retired Reemployed Healthcare	1.0	1.1	0.3	0.3	-	-
Health Insurance Contributions (HB1)	-	1.0	-	0.2	-	-
Investment Income (Net of Expenses)	4.3	5.1	2.4	2.4	0.8	0.8
Contribution Inflow	**45.7**	**50.7**	**3.4**	**3.9**	**3.9**	**4.3**
Healthcare Premiums	33.6	30.8	4.8	4.8	3.5	3.5
Administrative Expenses	-	-	-	-	-	-
Contribution Outflow	**33.6**	**30.8**	**4.8**	**4.8**	**3.5**	**3.5**
NET Cash Flow Before Gains/(Losses)	**12.1**	**19.9**	**(1.4)**	**(0.9)**	**0.4**	**0.8**
Realized Gain/Loss	4.7	6.6	4.0	5.3	1.7	2.1
NET CASH FLOW	**$16.8**	**$26.5**	**$2.6**	**$4.4**	**$1.8**	**$2.9**

CASH FLOW – Insurance Fund
(CERS Non-Haz and CERS-Haz)
September 30, 2019 (compared to September 30, 2018)
(in $millions)

8.3

	CERS NON-HAZARDOUS		CERS HAZARDOUS	
Contributions	**FY19**	**FY20**	**FY19**	**FY20**
Employer Contributions	$31.9	$30.9	$15.0	$15.6
Insurance Premiums	0.1	0.2	-	-
Retired Reemployed Healthcare	1.4	1.7	0.3	0.3
Health Insurance Contributions (HB1)	-	1.9	-	0.5
Investment Income (Net of Expenses)	10.5	10.6	5.6	5.6
Contribution Inflow	**43.9**	**45.3**	**20.9**	**22.0**
Healthcare Premiums	35.2	33.4	19.5	19.7
Administrative Expenses	0.2	0.2	0.1	0.6
Contribution Outflow	**35.4**	**33.6**	**19.6**	**20.3**
NET Cash Flow Before Gains/(Losses)	**8.5**	**11.7**	**1.3**	**1.7**
Realized Gain/Loss	20.7	26.5	11.4	14.4
NET CASH FLOW	**$29.2**	**$38.2**	**$12.7**	**$16.1**

Perimeter Park West, Inc.

MEMORANDUM

To: Members of the KRS Board of Trustees

From: Rebecca H Adkins
Interim Executive Director, Office of Operations, KRS
Agent, PPW

Date: November 14, 2019

Subject: PPW Lease Rate

On October 30, 2019, the PPW Board met and unanimously voted to request an increase in the lease rate of Perimeter Park West, 1260 & 1270 Louisville Road. Total square footage for the property is 85,357. The current rate is $8.77 per square foot. The request is to increase the rate to $12.50 per square foot. Finance Facilities confirmed the rate of $12.50 was reasonable for similar office space in Franklin County. The increase will allow for maintenance, safety, and necessary upgrades of the property. Upgrades will include replacement of air conditioning units which can no longer utilize R22 (i.e. Freon) per EPA regulation.

I am requesting that the Board approve an increase in lease rate for PPW from $8.77 ($748,580.89 annually) to $12.50 ($1,066,962.50 annually).

Thank you for your consideration.

9

Proposed Legislative Committee
KRS Board Presentation
November 14, 2019

Betty Pendergrass - Trustee
David Eager - Executive Director

10.1

Legislative Committee

Maximum of Five Trustees

- Two Representing Employers
- Two Representing Employees
- One Appointed with Investment Experience

Meet Only as Necessary

Legislative Committee Responsibiliti

- Request Committee meetings to review significant legislation
- Review the KRS Legislative Status Charts
- Evaluate proposed legislation in the General Assembly
- Review legislative recommendations of the G.A., KRS Board, K and others
- Provide guidance for staff drafting recommendations
- Approve, reject or modify changes
- Evaluate the need for referral to Board of Trustees for additio discussion and input
- Make final recommendations to the Board

10.1

Executive Director Responsibilities

- Provide the Legislative Status Chart to KRS Trustees
- Schedule meetings as needed
- Prepare draft changes to the Kentucky Revised Statutes b upon KRS Board or Legislative Committee recommendati
- Prepare and present housekeeping revisions

Executive Director Responsibilitie

- Research the impact of proposed changes and report the to the Committee
- Make preliminary contacts with legislators, employers, a interest groups to assist in formulating legislation
- Work with General Assembly, the Legislative Research Commission, the Governor's Office and interest groups t passage of the Board's legislative proposals and other int supported by the Board

10.1

2014 ByLaws Language
2019 Proposed Revisions

Section 2.2

e. **Legislative ~~and Budget~~ Committee.** The Legislative ~~and Budget~~ Committee shall consist of a maximum of ~~seven~~ five (~~7~~5) members, with two alternates. Committee membership should include 2 employer representatives, 2 employee representatives, plus 1 additional from the investment members appointed by the Governor. ~~and shall review the retirement systems administrative budget and recommend additions or reductions in specific program areas or budgetary items~~. The Committee reviews and recommends statutory changes to the Board related to the administration of benefits and compliance with federal law and determines which changes are in the best interests of the retirement systems. The Committee also reviews legislation proposed by the General Assembly that is likely to have *significant* impact on the funded status, existing member benefits, or system administration for any of the ten plans administered by KRS.

1. **Committee Responsibilities.** The Committee shall review the KRS Legislation Status Chart to evaluate the significance of proposed legislation pending in the General and recommend committee agenda items to discuss. The Legislative Committee will meet only as necessary. Meetings may be called as set forth in Section 1.l(f) of these bylaws. The Committee shall have the authority to review ~~budget recommendations and~~ legislative recommendations of members of the General Assembly, KRS Board, staff or others. The Committee may approve, reject and modify changes, as well as provide policy guidance for staff in drafting changes. The Committee will present the final recommendations to the Board for approval. The Committee shall review and approve executive staff recommendations for policies to track relevant legislation, refer topics to Committee for review, and provide information from KRS to the General Assembly.

2. **Executive Director Responsibilities.** The Executive Director will ensure that the Legislation Status Chart is provided to KRS Trustees and will schedule meetings based on the Legislative Committee's assessment of the impact of proposed legislation.~~,~~ ~~prepare the budget document and supporting schedules,~~ The Executive Director may also prepare draft changes to Kentucky Revised Statutes based on KRS Board or Legislative Committee recommendations, as well as housekeeping revisions to address technical issues and present them to Committee members prior to the date of a meeting. Staff will research the impact of proposed changes and report the results to the Committee. Staff will also make preliminary contacts with legislators, employers and interest groups to assist in formulating legislation to accommodate all interested parties. Staff will work with the General Assembly, Legislative Research Commission, the Governor's Office and interest groups to obtain passage of the Board's legislative proposals, or advocate other interests supported by the Board.

NON-DISCLOSURE AGREEMENT

This Agreement is entered into as of the ___ day of ____________________, 20___, the “Effective Date”, by and between the Kentucky Retirement Systems, hereinafter known as "KRS", and _____________________, hereinafter known as "Recipient".

WHEREAS KRS and the Recipient, hereinafter known as the “Parties”, have an interest in Recipient participating in the Legislative Review Committee, either as a committee member, as a staff person assigned to the committee, or as a Trustee, wherein KRS may share information with the Recipient that KRS considers to be confidential (“Confidential Information”); and

WHEREAS the Parties agree that Confidential Information may include, but not be limited to: (1) draft legislation; (2) draft administrative regulations; (3) draft policies and procedures of KRS; (4) draft actuarial analyses; or (5) other related legislative information;

WHEREAS the term “Confidential Information” further means any information or material which is proprietary to KRS, whether or not owned or developed by KRS, which is not generally known other than by KRS, and which the Recipient may obtain through any direct or indirect contact with KRS. The nature of the information and the manner of disclosure are such that a reasonable person would understand it to be confidential. Moreover, the term “Confidential Information” is specifically interpreted to include all documents designated as preliminary pursuant to KRS 61.878(i) and KRS 61.878(j), the disclosure of which is prohibited by this Agreement.

A. “Confidential Information” does not include:
   a. Matters of public knowledge that result from disclosure by KRS,
   b. Information rightfully received by the Recipient from a third party without a duty of confidentiality,
   c. Information independently developed by the Recipient,
   d. Information disclosed by operation of law,
   e. Information disclosed by the Recipient with the prior written consent of KRS,
   f. Any other information that both parties agree in writing is not confidential;

NOW, THEREFORE, the Parties agree as follows:

1. KRS may disclose Confidential Information to the Recipient provided that KRS identifies such information as confidential either by marking it, in the case of written materials, or, in the case of information that is disclosed orally or written materials that are not marked, by notifying the Recipient of the confidential nature of the information. Such notification may be done orally, by e-mail, written correspondence, or via other means of communication as might be appropriate.

2. When informed of the confidential nature of Confidential Information that has been disclosed by KRS, the Recipient shall refrain from disclosing such Confidential Information to any third party without prior, written approval from KRS' Executive Director and shall protect such Confidential Information from inadvertent disclosure to a third party using the same care and diligence that the Recipient uses to protect its own confidential information, but in no case less than reasonable care. The Recipient of Confidential Information disclosed under this Agreement shall promptly notify KRS of any disclosure of such Confidential Information in violation of this Agreement or of any subpoena or other legal process requiring production or disclosure of said Confidential Information.

3. All Confidential Information disclosed under this Agreement shall be and remain the property of KRS and nothing contained in this Agreement shall be construed as granting or conferring any rights to such Confidential Information on the Recipient. The Recipient shall honor any request from KRS to promptly return or destroy all copies of Confidential Information disclosed under this Agreement and all notes related to such Confidential Information. The Recipient agrees that KRS will suffer irreparable injury if its Confidential Information is made public, released to a third party or otherwise disclosed in breach of this Agreement and that KRS shall be entitled to obtain injunctive relief against a threatened breach or continuation of any such breach and, in the event of such breach, an award of actual and exemplary damages from any court of competent jurisdiction.

4. Neither Party will, without prior approval of the other Party, make any public announcement of or otherwise disclose the existence or the terms of this Agreement.

5. This Agreement contains the entire agreement between the Parties.

6. This Agreement shall remain in effect from the Effective Date unless otherwise terminated by either Party giving notice to the other of its desire to terminate this Agreement. The requirement to protect Confidential Information disclosed under this Agreement shall survive termination of this Agreement.

Recipient's Signature ______________________________ Date:________________
____

Print Name __________________________

KRS 2020 Housekeeping Requests

1. KRS 61.640 & 16.578 Death Before Retirement- Alternate Death Calculation
    - Conforming language to apply the alternate death calc to the life annuity, 60 months certain, actuarial refund and SSAO options as it was written prior to HB 416 in 2009 inadvertently changed the language.

2. KRS 61.598(2)(a) – Member Pension Spiking
    - Add a minimum of $1000 salary spikers' increases required to trigger a pension spike.
    - 250 less than $1000 ones only reduced monthly benefits an average of $3.49.

3. KRS 61.645(4)(e)
    - Remove requirement for ballots to be returned to a Kentucky post office box. Ballot vendor may be out of state.
    - Remove requirement that ballot vendor be an auditing firm.
    - Remove requirement for "checking a square opposite the name of the candidate". May need other alternatives.

4. KRS 61.650(42)(b) & 61.637(17)(e)4 – Volunteer Definition
    - Retired members need not report reemployment with a participating employer after 12 months.
    - Currently the period for volunteers is 24 months.
    - Needs to change to 12 months for consistency.

5. KRS 61.637(17)(b)3 & (17)(d)3 – Retired / Reemployed Employer Contributions
    - Provide a fixed normal contribution from participating employers who hire retirees
    - Make it affordable for them to rehire retirees.
    - Reduce the need to outsource to save money.

6. KRS 61.540(1) – Statement of Member and Employer – Summary Plan Description
    - Change "shall" to "may" in 64.540. Was missed when KRSj 61.526 made that same change.

Three Other KRS Legislative Proposals

1. Require members who use reciprocity to retire between multistate-administered retirement systems to take health insurance with the system in which they have the most time rather than give them a choice. Some members who have participation time in KTRS and KRS (albeit very little time) will choose KRS retiree health care because the benefits are better.

2. Provide some type of penalty under KRS 61.685 for commission of a fraud against KRS to obtain benefits or assist anyone to do the same.

3. Require LRC to pay the cost of all actuarial analysis.

KENTUCKY RETIREMENT SYSTEMS
David L. Eager, Executive Director
Perimeter Park West • 1260 Louisville Road • Frankfort, Kentucky 40601
kyret.ky.gov • Phone: 502-696-8800 • Fax: 502-696-8822

MEMORANDUM

Date: November 14, 2019

To: Board of Trustees of Kentucky Retirement Systems
David L. Eager, Executive Director

From: Alan Hurst, Staff Attorney

Re: Quasi-governmental employer cessation window
105 KAR 1:149E

Kentucky Revised Statute 61.522(6) permits certain quasi-governmental employers in the Kentucky Employees Retirement System to cease participation of its nonhazardous employees under the provisions and requirements of Kentucky Revised Statute 61.522(8). The ceased quasi-governmental employer shall pay the actuarial cost of benefits accrued by its current and former nonhazardous employees through June 30, 2020. Kentucky Revised Statute 61.522(9) requires the Board to promulgate administrative regulations to administer the provisions of the statute.

Attached is the draft regulation, 105 KAR 1:149E Quasi-governmental employer cessation window, codifying Kentucky Retirement Systems' administration of the aforementioned provisions as mandated by Kentucky Revised Statute 61.522(9). This administrative regulation establishes the temporary procedures and requirements for quasi-governmental employer cessation from participation in the Kentucky Employees Retirement System pursuant to Kentucky Revised Statute 61.522(8). It is the intent of Kentucky Retirement Systems to file this regulation under the "emergency" classification in Kentucky Revised Statute 13A.190 to give immediate effect.

Upon your voting approval today, Kentucky Retirement Systems will file the administrative regulation with the Legislative Research Commission on November 15, 2019.

Thank you.

STATEMENT OF EMERGENCY
105 KAR 1:149E

(1) Pursuant to KRS 13A.190, the proposed new administrative regulation is an emergency. This emergency administrative regulation establishes the processes and procedures to implement the provisions of 2019 Special Session House Bill 1.

(2) An emergency administrative regulation is necessary to provide the processes and procedures to implement 2019 Special Session House Bill 1. This bill was enacted on an emergency basis on July 24, 2019, in order to ensure the financial health of quasi-governmental employers. Pursuant to KRS 13A.190(1)(a), this regulation must be placed into effect immediately in order to meet the deadlines imposed by 2019 Special Session House Bill 1 and to address the emergency declared to protect the financial health of quasi-governmental employers, which is vital to the future of Kentucky.

(3) This emergency administrative regulation shall be replaced by an ordinary administrative regulation. The ordinary administrative regulation is identical to this emergency administrative regulation.

_______________________________ DATE: ______________

MATTHEW G. BEVIN, GOVERNOR
COMMONWEALTH OF KENTUCKY

_______________________________ DATE: ______________

DAVID L. EAGER,
EXECUTIVE DIRECTOR
KENTUCKY RETIREMENT SYSTEMS

FINANCE AND ADMINISTRATION CABINET

Kentucky Retirement Systems

(New Emergency Administrative Regulation)

105 KAR 1:149E. Quasi-governmental employer cessation window.

RELATES TO: KRS 61.510 to 61.705, 18A.225, 18A.205, 26 U.S.C. 401, 402, 403

STATUTORY AUTHORITY: KRS 61.522(9), 61.645(9)(e)

NECESSITY, FUNCTION, AND CONFORMITY: KRS 61.645(9)(e) requires the Board of Trustees of Kentucky Retirement Systems to promulgate administrative regulations necessary or proper in order to carry out the provisions of KRS 61.510 to 61.705. KRS 61.522(6) permits certain quasi-governmental employers in the Kentucky Employees Retirement System to cease participation of its nonhazardous employees under the provisions and requirements of KRS 61.522(8). The ceased quasi-governmental employer shall pay the full actuarial cost of benefits accrued by its current and former nonhazardous employees through June 30, 2020, except as provided by KRS 61.522(8)(g)4. KRS 61.522(9) requires the Board to promulgate administrative regulations to administer the provisions of the statute. This administrative regulation establishes the temporary procedures and requirements for quasi-governmental employer cessation from participation in the Kentucky Employees Retirement System pursuant to KRS 61.522.

Section 1. Definitions. (1) "Alternative retirement program" means a plan provided by a ceased quasi-governmental employer, which meets the qualification requirements of

26 U.S.C. 401(a) or 26 U.S.C. 403(b), is eligible to receive direct trustee-to-trustee transfers of pre-tax and post-tax contributions, and shall not include a defined benefit plan.

(2) "Ceased employer" means a quasi-governmental employer who, on or after April 1, 2020, but prior to May 1, 2020, submits a resolution to cease participation in Kentucky Employees Retirement System (“KERS”), which is accepted by the Board on or before June 30, 2020.

(3) “Employer”, for the purposes of this regulation, means a quasi-governmental employer including local and district health departments governed by KRS Chapter 212, state-supported universities and community colleges, the Kentucky Higher Education Student Loan Corporation, and any other agency otherwise eligible to voluntarily cease participating in KERS pursuant to KRS 61.522.

(4) “Employer election” means an election by ceasing employers set forth in the resolution to cease participation in KERS regarding whether nonhazardous employees hired prior to June 30, 2020, who began participating in KERS prior to January 1, 2014, will continue to participate in KERS after June 30, 2020. Nonhazardous employees of employers who do not elect for their employees to continue participating in KERS will not accrue additional service credit or benefits with KERS through the ceased employer after June 30, 2020.

(5) “Nonhazardous employee” means a regular full-time employee participating in KERS in a position other than a position classified as hazardous by the Board pursuant to KRS 61.592.

Section 2. (1) An employer may request an estimate of the actuarial cost of ceasing participation in KERS of its nonhazardous employees prior to December 31, 2019. The request shall be made by completing the Form 7726, “Request for Estimated Cost of Voluntary Cessation from KERS under KRS 61.522(8).”

(2) Kentucky Retirement Systems (hereafter “Systems”) shall provide the estimate of the cost within sixty (60) days of receipt of the Form 7726, however, no estimate shall be required to be provided prior to January 31, 2020.

(3) Systems shall provide the estimate of the cost based on the information currently in its database and projecting the service and creditable compensation of all nonhazardous employees as if they remain employed in a regular full-time position through June 30, 2020.

(4) The estimated actuarial cost of ceasing participation shall not be binding on the Systems.

(5) The employer shall not rely on the estimated actuarial cost of ceasing participation.

(6) Systems shall notify the employer of the administrative cost to process the Form 7726. The administrative cost shall be calculated as follows:

(a) If the number of employees and former employees to be submitted to the actuary for purposes of determining the estimated actuarial cost of cessation equals one (1) to 100 employees, the administrative cost shall be $1,500.

(b) If the number of employees and former employees to be submitted to the actuary for purposes of determining the estimated actuarial cost of cessation equals 101 or more employees, the administrative cost shall be $4,000.

(7) Systems shall process the Form 7726 after the employer has remitted its payment for the administrative cost.

Section 3. (1) The governing body of an employer seeking to cease participation in KERS through KRS 61.522(8) shall pass a resolution to cease participation and submit the resolution to the Board on or after April 1, 2020, but prior to May 1, 2020.

(2) The resolution shall contain the following statements:

(a) That the employer has decided to voluntarily cease participation in KERS;

(b) The employer election and acknowledgement as to whether nonhazardous employees hired prior to June 30, 2020, who began participating in the Systems prior to January 1, 2014, will, as a result of the employer election, either continue to participate or cease earning service credit and benefits after June 30, 2020;

(c) That the employer acknowledges it is unable to rescind the resolution to cease participation after April 30, 2020;

(d) That the employer acknowledges it is subject to the requirements and restrictions of KRS 61.522 and this administrative regulation;

(e) That the employer acknowledges that in order to cease participation in KERS pursuant to KRS 61.522(8), the employer shall pay the actuarial cost of ceasing participation and all administrative costs associated therewith;

(f) That the employer agrees to cooperate with the Systems to educate its employees about the effect of cessation and the employer election on the employees’ retirement accounts and the employees’ options regarding their retirement accounts;

(g) That the employer shall not mandate, force, or require its employees to take a refund of their accumulated account balance as defined by KRS 61.510(41), or retaliate against its employees who chose not to take refunds of their accumulated account balance as defined in KRS 61.510(41); and

(h) That the employer shall hold the Commonwealth and the Systems, including board members and employees of the Systems, harmless from damages, attorney's fees and costs from legal claims for any cause of action brought by any member or retired member of the ceasing employer related to the cessation of the employer.

(3) The Board shall accept the resolution on or before June 30, 2020, in order for the employer to cease participation.

(4) In the event that a resolution to cease participation in the KERS is not received by the Board prior to May 1, 2020, the employer shall continue to participate in the KERS and pay the full actuarially determined contributions for fiscal years occurring on or after July 1, 2020.

Section 4. (1) An employer shall file a completed Form 7727, "Actuarial Study for Quasi-Governmental Employer Cessation" with its resolution on or after April 1, 2020, but prior to May 1, 2020, with the executive director of the Systems.

(2) The employer shall submit the following documents with its Form 7727:

(a) Documentation of the alternative retirement program created by or being created by the employer for its employees, such as the determination letter issued by the Internal Revenue Service or a written description of the alternative retirement program;

(b) The employer's most recent five (5) audited financial statements and independent auditor's reports; and

(c) The employer's most recent five (5) Consolidated Annual Financial Reports, if applicable.

(3) The employer shall submit with its Form 7727, an encrypted electronic file in a format prescribed by the Systems listing each current and former nonhazardous employee, employed in a full-time position as defined by KRS 61.510(21), who was employed during any period the employer participated in KERS, containing:

(a) Full name;

(b) Last known address;

(c) Date of birth;

(d) Social security number or Systems member identification number;

(e) Beginning date of employment;

(f) Date employment ended, if applicable;

(g) Sick leave balance;

(h) Beginning and ending dates of any active duty military service when the employee was not employed by the employer filing the Form 7727, if available; and

(i) Beginning and ending dates of any active duty military service when the employee was employed by the employer filing the Form 7727.

Section 5. (1) The employer shall pay the administrative costs incurred by the Systems for the actuarial study completed in accordance with the Form 7727, as well as all other administrative costs incurred for ceasing participation pursuant to KRS 61.522(3)(a).

(2) The employer shall pay $10,000 as a deposit with the Form 7727.

(3) Systems shall place the deposit in a designated account and shall utilize the funds to pay the administrative costs of processing the employer's Form 7727.

(4) Systems shall charge a reasonable fee for its administrative costs associated with processing of the employer’s Form 7727 and send an invoice to the employer upon completion of the actuarial study.

(a) Systems shall apply the deposit received pursuant to subsection (2) of this section to any administrative costs incurred by the Systems attributable to the employer’s cessation in accordance with KRS 61.522(8).

(b) Following the application of the deposit to the outstanding administrative costs, Systems shall submit an invoice to the employer for the additional administrative costs and the employer shall pay the invoice for the remaining administrative costs within thirty (30) days of the date of the invoice.

(5)(a) If the total administrative cost is less than the deposit paid by the employer, Systems shall credit the remaining balance of the deposit to the employer.

Section 6. (1) Systems shall make reasonable efforts to notify each nonhazardous employee identified on the list provided by the ceased employer that the employer is ceasing participation pursuant to KRS 61.522(8).

(2) For those eligible nonhazardous employees, the Systems shall provide notice informing the employee of the right to request an irrevocable refund, pursuant to KRS 61.522(3)(a)5., of their accumulated account balance as defined in KRS 61.510(41) by submitting a completed Form 1500, “KRS 61.522 60-Day Transfer Request” within sixty (60) days of June 30, 2020 to Kentucky Retirement Systems. The notice shall be sent no later than June 19, 2020.

(a) Systems shall send the notice to the active nonhazardous employees listed by the employer who has filed a Form 7727 on its most recent report required by KRS 61.675 submitted prior to the date the notices are mailed.

(b) The employer shall submit the name and contact information of each nonhazardous employee it hired between the completion of the Form 7727 and before June 30, 2020, within five (5) days of the date the employee begins working for the employer.

(c) A Form 1500 submitted on or before June 30, 2020, shall be void.

(d) A Form 1500 submitted after August 31, 2020, shall be void.

(e) The employee shall be employed by the employer who has filed a Form 7727 on June 30, 2020, to be eligible to request a refund of his accumulated account balance pursuant to KRS 61.522(3)(a)5.

(f) An employee who submitted Form 1500 to the Systems may rescind the form by submitting written notice to the Systems on or before August 31, 2020.

(g) If an employee requests a refund pursuant to KRS 61.522(3)(a)5., the employee’s accumulated account balance shall be transferred to the employer’s alternative retirement program pursuant to this section even if the employee terminates employment with the employer after June 30, 2020, unless the employee rescinds the Form 1500 on or before August 31, 2020.

(3)(a) The employer shall establish an alternative retirement program on or before August 31, 2020, as provided in KRS 61.522(3)(a)5.

(b) The employer shall submit the final plan documents for its alternative retirement program as well as an affirmative statement that the alternative retirement program does not include a defined benefit plan.

(c) The employer shall submit verification that it has established an alternative retirement program qualified under 26 U.S.C. 401(a) or 26 U.S.C. 403(b) that is eligible to receive direct trustee-to-trustee transfers of pre-tax and post-tax contributions and does not include a defined benefit plan. Systems shall accept one (1) of the following as verification that the employer has established a valid alternative retirement program:

1. A determination letter from the Internal Revenue Service providing that the alternative retirement program established by the employer is a qualified plan pursuant to 26 U.S.C. 401(a) or 26 U.S.C. 403(b) capable of accepting trustee-to-trustee transfers;

2. A letter from the employer's legal counsel certifying that the alternative retirement program satisfies the requirements of 26 U.S.C. 401(a) or 26 U.S.C. 403(b) capable of accepting trustee-to-trustee transfers; or

3. Other reliable verification as determined by the Systems.

(d) Refunds requested pursuant to KRS 61.522(3)(a)5. shall be transferred to the alternative retirement program established by the ceased employer by trustee-to-trustee transfer after August 31, 2020.

1. The alternative retirement program shall accept and separately account for post-tax employee contributions.

2. The ceased employer's legal counsel shall provide written certification that its alternative retirement program shall accept and separately account for post-tax employee contributions.

(e) If the ceased employer fails to establish an alternative retirement program pursuant to paragraph (a) of this subsection, the refund requests pursuant to KRS 61.522(3)(a)5. shall be void. The employees who filed the refund requests pursuant to KRS

61.522(3)(a)5. shall remain members of the system and shall be included in the full actuarial cost.

(4) Former employees of the ceased employer who are currently participating in the State Police Retirement System, County Employees Retirement System, or Kentucky Employees Retirement System, due to employment with a participating agency, shall not be eligible to take a refund of their accumulated account balance until terminating employment with the participating employer.

(5) Current employees of the ceased employer who are also employed by another employer participating in the State Police Retirement System, County Employees Retirement System, or Kentucky Employees Retirement System shall not be eligible to take a refund of their accumulated account balance until terminating employment with the participating employer.

(6) Current employees of the ceased employer on June 30, 2020, may request a refund pursuant to KRS 61.522(3)(a)5.

(7)(a) Former employees of the ceased employer who are not participating in State Police Retirement System, County Employees Retirement System, or Kentucky Employees Retirement System shall not be eligible to take a refund of their accumulated account balance pursuant to KRS 61.522(3)(a)5.

(b) The account balance of former employees of the ceased employer who are not participating in State Police Retirement System, County Employees Retirement System, or Kentucky Employees Retirement System but who were employed with the ceased employer on June 30, 2020, and who submitted a valid Form 1500 pursuant to this section, shall be transferred to the employer's alternative retirement program unless the employee rescinds the Form 1500 on or before August 31, 2020.

(8) The four (4) percent employer pay credit and applicable interest accrued shall vest as of June 30, 2020, for those nonhazardous employees who began participating on or after January 1, 2014, and who request a refund pursuant to KRS 61.522(3)(a)5.

Section 7. (1)(a) The employer shall continue to file reports and remit employer contributions on all employees in accordance with KRS 61.675 and 105 KAR 1:140 for creditable compensation paid through June 30, 2020.

(b) If the employer elects for nonhazardous employees to continue participation through the employer election, the employer shall continue to file reports in accordance with KRS 61.675 and 105 KAR 1:140. In addition, the employer shall continue to report all applicable pick up installments for pre-tax service purchases pursuant to KRS 61.552(14)(c). However, pursuant to KRS 61.522(8)(d)2., the employer shall not remit employer contributions for nonhazardous employees after June 30, 2020, as those amounts are factored into the cost calculation established by KRS 61.522(7).

(c) The employer shall continue to remit employer contributions for all hazardous employees.

(2)(a) If a member who is an employee of a ceased employer files for disability retirement benefits but does not establish a last day of paid employment prior to June 30, 2020, and does not continue participation, the Systems shall use June 30, 2020, as the member's last day of paid employment.

(b) If a member who is an employee of a ceased employer continues participation because of the employer election and files for disability retirement benefits, the member's last day of paid employment shall be established pursuant to KRS 61.510(32).

(3)(a) The ceased employer shall continue to pick-up payments for installment purchase of service for any employee who is purchasing service pursuant to KRS 61.552(14) and 105 KAR 1:150 through June 30, 2020.

(b) An employee that ceases participation in KERS on June 30, 2020, shall have sixty (60) days from the date of cessation to pay in full any outstanding balance on the installment purchase agreement pursuant to KRS 61.552(14) and 105 KAR 1:150.

Section 8. (1) Employees of a ceased employer shall comply with the provisions of KRS 61.590, 61.625 and 61.637.

(2) Employees of a ceased employer shall terminate employment with all participating employers of the State Police Retirement System, County Employees Retirement System, Kentucky Employees Retirement System and the ceased employer prior to retiring pursuant to KRS 61.590 or taking a refund pursuant to KRS 61.625.

(3)(a) Employees of a ceased employer shall comply with KRS 61.637 and 105 KAR 1:390 after retirement.

(b) The ceased employer shall certify that the employee seeking to retire or take a refund is terminating employment or has terminated employment with no prearranged agreement to return to work for the ceased employer.

Section 9. (1) Employees shall receive service credit for sick leave accrued pursuant to KRS 61.546 as of June 30, 2020.

(a) If the ceased employer participates in a sick leave program established in KRS 61.546 the employer shall report to the Systems the number of hours of each employee's accumulated sick leave as of June 30, 2020.

(b) Systems shall credit the months of sick leave service reported pursuant to this section to the employee's total service credit to determine the ceased employer's actuarial cost.

(c) If the ceased employer elects that nonhazardous employees hired prior to June 30, 2020, who began participating in the Systems prior to January 1, 2014, will continue participation pursuant to KRS 61.522(8)(d), then those employees shall continue to receive service credit for sick leave accrued pursuant to KRS 61.546 after June 30, 2020, while participating through the ceased employer.

(2)(a) Systems shall credit the months of military service pursuant to KRS 61.555 prior to June 30, 2020, and include the months in the calculation of the ceased employer's actuarial cost.

(b) If the ceased employer elects that nonhazardous employees hired prior to June 30, 2020, who began participating in the Systems prior to January 1, 2014, will continue participation pursuant to KRS 61.522(8)(d), then those employees shall continue to be able to obtain military service pursuant to KRS 61.555 if otherwise eligible.

Section 10. (1) The ceased employer shall pay or otherwise resolve all its invoices and correct all reporting in accordance with KRS 61.675 and 105 KAR 1:140 by August 31, 2020.

(2)(a) Systems shall provide the ceased employer with the amount of the full actuarial cost by sending a notice of actuarial cost and the report of the actuary to the employer.

(b) Systems shall provide the ceased employer with the payment amounts required if the ceased employer elects to pay the actuarial cost in installment payments.

(3)(a) The ceased employer shall elect on the Form 7728, “Payment Election for Quasi-Governmental Employer Cessation” whether to pay the actuarial cost of cessation by lump-sum payment or in installment payments not to exceed thirty (30) years from June 30, 2020.

(b) The Form 7728 shall be received in the retirement office on or before thirty (30) days after the date on which the Systems mailed the notice of actuarial cost and the report of the actuary to the ceased employer.

(c) A ceased employer intending to pay the full actuarial cost by lump-sum shall submit with the Form 7728 documentation of the source of the funds the employer intends to use to pay the full actuarial cost.

(d) A ceased employer intending to pay the actuarial cost by installment payment plan shall submit with the Form 7728 documentation of:

1. Source of funds to pay the installment payments;

2. List of real property owned by the ceased employer, including deeds of conveyance, title, all liens or encumbrances on the real property, and any current written contractual lease or rental agreement of the real property identified;

3. List of liabilities of the ceased employer; and

4. Inventory of all personal property owned by the ceased employer or in which the employer has an interest that may be used as collateral by the employer, including chattel paper, deposit accounts, documents, goods covered by documents, instruments, investment property, letters of credit rights, and money.

(4)(a) Ceased employers who elect to pay the full actuarial cost by lump-sum shall make the payment by June 30, 2021, pursuant to KRS 61.522(3)7.

(b) If the lump-sum payment is not received by the Systems at the retirement office on or before June 30, 2021, then the ceased employer shall make installment payments and the payment amount shall be recalculated based upon this adjustment with interest added for fiscal year 2021-2022. The ceased employer shall also remit all outstanding installments payments.

(c) Systems shall notify any ceased employer who has not submitted the lump-sum payment on June 21, 2021, of the impending deadline and the consequences of failing to timely pay.

(5)(a) If the ceased employer elects to pay the actuarial cost of cessation in installment payments, the cost shall be financed by the Systems pursuant to KRS 61.522(8)(g).

(b) If the ceased employer elects for nonhazardous employees who began participating in the Systems prior to January 1, 2014, to continue participating in KERS, and the employer is not projected to pay the full actuarial cost in thirty (30) years, then the Systems shall adjust the payments so that the full actuarial costs are paid at the end of the thirty (30) year period.

(c) If the ceased employer elects for nonhazardous employees who began participating in the Systems prior to January 1, 2014 to cease participating in KERS, and the employer is not projected to pay the full actuarial cost in thirty (30) years, then the employer shall pay the amount financed through the Systems pursuant to KRS 61.522(8)(g)1. and no adjustments shall be made to the monthly payments nor shall additional amounts be charged after the thirty (30) year period.

(6)(a) Interest shall be assigned to the principal amount annually for both lump-sum and installment payment plans beginning on July 1, 2020. A ceased employer who elects to pay the actuarial cost by installments may at any time submit payments towards the remaining balance.

(b) If the employer elects to pay the costs in installment payments, the annual payments beginning on or after July 1, 2020, including interest will be calculated as a set dollar value and then divided into monthly installments.

(c) If the ceased employer submits more than the required payments for a fiscal year, the total cost will be reduced but the monthly installment amounts will remain unchanged because the monthly amounts are based upon the set dollar value of the annual payments. Pursuant to KRS 61.522(8)(g), interest amounts are separate from total cost and interest and interest attributable to the actuarial cost will not be calculated until the cost is finalized. However, any early or additional payments may reduce the number of payments required if the full actuarial cost is paid in less than thirty (30) years from June 30, 2020.

(7) Payments made prior to the notice of full actuarial cost shall be credited to the amount and considered early or additional payments pursuant to (6)(c) of this section.

Section 11. (1)(a) If a ceased employer elects to make installment payments, the Systems shall submit invoices to the employer for payments owed, which are not paid through the normal monthly reports.

(b) The employer shall remit payment to the Systems by the due date provided on the invoice.

(2)(a) If a ceased employer that elected to make installment payments is delinquent for ninety (90) days or more from the due date of an outstanding invoice, and the ceased employer elected for nonhazardous employees with participation dates prior to January 1, 2014, to continue participating, then the participation of those employees in KERS through the ceasing employer will be suspended until the ceased employer has remitted the required payments. The employees shall not earn service credit, including service credit purchased pursuant to KRS 61.552, or benefits in KERS through the ceased employer during the suspension period.

(b) Any employee contributions provided to the Systems will be held until the ceased employer remits the required payments.

(3) Systems shall notify the Finance and Administration Cabinet of any ceased employer that is delinquent for ninety (90) days or more in making installment payments pursuant to KRS 61.675(4)(c).

(4) Systems may file an action in Franklin Circuit Court to collect delinquent installment payments and attach general fund appropriations in order to satisfy the payments owed.

Section 12. (1)(a) Current and former employees of the ceased employer shall not be eligible to purchase service credit pursuant to KRS 61.552 after June 30, 2020, unless the current employee has continued participation in KERS because of the employer election.

(b) A current employee of a ceased employer continuing participation in KERS because of the employer election may purchase service credit pursuant to KRS 61.552 even if that service is related to employment with the ceased employer.

(2) Former employees shall not be eligible to purchase service credit related to employment with a ceased employer, pursuant to KRS 61.552 after June 30, 2020.

(3) A person eligible to purchase service credit pursuant to KRS 61.552 related to employment with the ceased employer, must either complete the purchase or enter into a service purchase agreement with the Systems no later than June 30, 2020 unless the individual is a current employee of the ceased employer who has continued participation in KERS because of the employer election.

(4) A person may purchase service credit pursuant to KRS 61.552(20) if the service is not related to employment with the ceased employer, unless the person is a current employee that has continued participation in KERS because of the employer election.

(5) A former employee of a ceased employer who becomes employed with a participating employer after terminating employment with the ceased employer may purchase service credit pursuant to KRS 61.552 that is not related to employment with a ceased employer.

Section 13. If any due date in this regulation or if an installment payment falls on a Saturday, Sunday, or day that the Systems is closed due to state holiday, the due date or time period deadline shall extend to the close of business of the next business day.

Section 14. Incorporation by Reference. (1) The following material is incorporated by reference:

(a) Form 7726, “Request for Estimated Cost of Voluntary Cessation from KERS under KRS 61.522(8),” August 2019;

(b) Form 7727, “Actuarial Study for Quasi-Governmental Employer Cessation”, November 2019;

(c) Form 1500, "KRS 61.522 60-Day Transfer Request", October 2019; and

(d) Form 7728, “Payment Election for Quasi-Governmental Employer Cessation”, November 2019.

(2) This material may be inspected, copied, or obtained, subject to applicable copyright law, at the Kentucky Retirement Systems, 1260 Louisville Road, Frankfort, Kentucky 40601, Monday through Friday, 8 a.m. to 4:30 p.m.

APPROVED:

______________________________________ ____________

DAVID L. EAGER, DATE
EXECUTIVE DIRECTOR
KENTUCKY RETIREMENT SYSTEMS

REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

Regulation number: 105 KAR 1:149E
Contact person: Mark C. Blackwell
Phone number: 502-696-8800 ext. 8645
Email: Legal.Non-Advocacy@kyret.ky.gov

(1) Provide a brief summary of:

(a) What this administrative regulation does: This administrative regulation establishes the processes and procedures for a quasi-governmental employer participating in the Kentucky Employees Retirement System to voluntarily cease participation in accordance with KRS 61.522(8).

(b) The necessity of this administrative regulation: This administrative regulation is necessary to establish the processes and procedures for a quasi-governmental employer participating in the Kentucky Employees Retirement System to voluntarily cease participation in accordance with KRS 61.522(8).

(c) How this administrative regulation conforms to the content of the authorizing statutes: This administrative regulation conforms to the authorizing statute by establishing the processes and procedures for a quasi-governmental employer participating in the Kentucky Employees Retirement System to voluntarily cease participation in accordance with KRS 61.522(8).

(d) How this administrative regulation currently assists or will assist in the effective administration of the statutes: This administrative regulation will assist in the effective administration of the statutes by establishing the processes and procedures for a quasi-governmental employer participating in the Kentucky Employees Retirement System to voluntarily cease participation in accordance with KRS 61.522(8).

(2) If this is an amendment to an existing administrative regulation, provide a brief summary of:

(a) How the amendment will change this existing administrative regulation: This is a new regulation.

(b) The necessity of the amendment to this administrative regulation: This is a new regulation.

(c) How the amendment conforms to the content of the authorizing statutes: This is a new regulation.

(d) How the amendment will assist in the effective administration of the statutes: This is a new regulation.

(3) List the type and number of individuals, businesses, organizations, or state and local governments affected by this administrative regulation: Kentucky Retirement Systems and quasi-governmental employers wishing to cease participation in the Kentucky Employees Retirement System.

(4) Provide an analysis of how the entities identified in question (3) will be impacted by either the implementation of this administrative regulation, if new, or by the change, if it is an amendment, including:

(a) List the actions that each of the regulated entities identified in question (3) will have to take to comply with this administrative regulation or amendment: This regulation will allow provide certain quasi-governmental employers a limited window in which to cease participation in Kentucky Employees Retirement System.

(b) In complying with this administrative regulation or amendment, how much will it cost each of the entities identified in question (3): The quasi-governmental employer would have its internal cost of voluntary ceasing participating, which would vary by employer. As required by the statute, KRS 61.522, the employer must also pay all the administrative costs incurred by Kentucky Retirement Systems. This cost will also vary by employer.

(c) As a result of compliance, what benefits will accrue to the entities identified in question (3): The quasi-governmental employer will be permitted to voluntarily cease participating in the Kentucky Employees Retirement System.

(5) Provide an estimate of how much it will cost to implement this administrative regulation:

(a) Initially: The cost of filing the application and completing the process of voluntary withdrawal.

(b) On a continuing basis: There will be no continuing cost to the employer.

(6) What is the source of the funding to be used for the implementation and enforcement of this administrative regulation: Administrative expenses of the Kentucky Retirement Systems are paid from the Retirement Allowance Account (trust and agency funds).

(7) Provide an assessment of whether an increase in fees or funding will be necessary to implement this administrative regulation, if new, or by the change if it is an amendment: There is no increase in fees or funding required.

(8) State whether or not this administrative regulation establishes any fees or directly or indirectly increases any fees: This administrative regulation does not establish any fees or directly or indirectly increase any fees. The employer must pay the administrative costs incurred by Kentucky Retirement Systems pursuant to KRS 61.522.

(9) TIERING: Is tiering applied? (Explain why or why not) Tiering is not applied. All quasi-governmental employers seeking to voluntarily cease participation are subject to the same processes and procedures.

FISCAL NOTE ON STATE OR LOCAL GOVERNMENT

Regulation number: 105 KAR 1:149E
Contact person: Mark C. Blackwell
Phone number: 502-696-8800 ext. 8645
Email: Legal.Non-Advocacy@kyret.ky.gov

(1) What units, parts, or divisions of state or local government (including cities, counties, fire departments, or school districts) will be impacted by this administrative regulation? Kentucky Retirement Systems and quasi-governmental employers eligible to voluntarily cease participation in the Kentucky Employees Retirement System pursuant to KRS 61.522(6).

(2) Identify each state or federal statute or federal regulation that requires or authorizes the action taken by the administrative regulation. KRS 61.522.

(3) Estimate the effect of this administrative regulation on the expenditures and revenues of a state or local government agency (including cities, counties, fire departments, or school districts) for the first full year the administrative regulation is to be in effect. The employer will have to pay its internal administrative costs and Kentucky Retirement Systems' administrative costs. The administrative regulation generates no revenue, but will allow employers to cease participation, which will eliminate the requirement for them to pay continuing employer contributions after cessation. The employer is required by statute to pay the actuarial cost of cessation.

(a) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for the first year? None.

(b) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for subsequent years? None.

(c) How much will it cost to administer this program for the first year? Ultimately, the cost to Kentucky Retirement Systems should be negligible, as KRS 61.522 requires voluntary ceasing quasi-governmental employers to pay its internal administrative costs and Kentucky Retirement Systems' administrative costs related to cessation.

(d) How much will it cost to administer this program for subsequent years? KRS 61.522 requires the ceasing quasi-governmental employer to pay its internal administrative costs and Kentucky Retirement Systems' administrative costs so the cost to Kentucky Retirement Systems should be negligible.

Note: If specific dollar estimates cannot be determined, provide a brief narrative to explain the fiscal impact of the administrative regulation.

Revenues (+/-):
Expenditures (+/-):
Other Explanation:

105 KAR 1:149E

SUMMARY OF MATERIAL INCORPORATED BY REFERENCE

The material incorporated by reference consists of the following forms:

(a) Form 7726, “Request for Estimated Cost of Voluntary Cessation from KERS under KRS 61.522(8),” August 2019. This is the form used by employers to request an estimate of the actuarial cost to voluntarily cease participation.

(b) Form 7727, “Actuarial Study for Quasi-Governmental Employer Cessation,” November 2019. This is the form used by quasi-governmental employers, which is filed with their resolution, to begin the process to voluntarily cease participation in KERS through KRS 61.522(8).

(c) Form 1500, "KRS 61.522 60-Day Transfer Request", October 2019. This is the form used by employees of ceasing employer to complete a transfer of their account balance to the employer qualified alternate retirement program within sixty (60) days of the effective cessation date pursuant to KRS 61.522(3)(a).

(d) Form 7728, “Payment Election for Quasi-Governmental Employer Cessation”, November 2019. This is the form used by ceased quasi-governmental employers in order to elect whether the actuarial cost will be paid in installments or a lump-sum. This form must be submitted to the Systems on or before thirty (30) days after the Systems mailed the notice of actuarial cost and the report of the actuary to the ceased employer.

There are six (6) pages incorporated by reference.

GRS Retirement Consulting

MEMORANDUM

Date: November 6, 2019

To: Kentucky Retirement Systems

From: Daniel J. White, FSA, EA, MAAA
Janie Shaw, ASA, MAAA

Re: Proposed Process and Timeline for the Cessation Liability Calculations for the Quasi-Governmental Agencies in Accordance with HB 1 enacted during the 2019 Special Session

This memo provides an outline of the proposed methodology and timeline for GRS to perform the cessation liability calculations under a cessation window provided by HB 1 (enacted during the 2019 Special Session). There are 118 quasi-governmental agencies (e.g. mental health, health districts, non-P1 agencies, and universities) that are eligible to cease participation from the Kentucky Employees Retirement Non-Hazardous System (KERS-NH) under this window.

Summary of Key Cessation Provisions

This cessation window provides an opportunity for these agencies to voluntarily cease participation in KERS-NH effective June 30, 2020 under provisions that are different than the cessation provisions previously in Statute (KRS Section 61.522, as amended by HB 351). If an agency elects to cease participation in KERS-NH under this window, then the agency will be able to choose whether its current employees hired prior to January 1, 2014 will continue as active members in KERS-NH and earn additional benefits after the cessation date (i.e. a Soft Freeze) or whether all its employees will become inactive members in KERS-NH as of the cessation date (i.e. a Hard Freeze). Employees earning benefits in the KERS-NH Tier 3 hybrid cash balance plan may elect to transfer their accumulated balance (i.e. accumulated employee contributions, employer pay credit, and interest credit) regardless of the employee's years of service. However, none of the Tier 3 employees will continue accruing benefits in KERS-NH past the cessation date regardless of the option chosen by the agency. Agencies that do not elect to cease participation in KERS-NH will contribute the full actuarially determined contribution rate beginning July 1, 2020.

An agency electing to cease participation will be provided an opportunity to pay its actuarial cost as a one-time lump-sum payment, or as installments. The assumptions used to calculate the actuarial cost will depend on the type of cessation the agency elects (i.e. Hard Freeze or Soft Freeze) and how the agency pays for the cost (i.e. lump sum or installments).

Agencies that elect to finance the actuarial cost in installments will, beginning in fiscal year 2020/2021, contribute a dollar amount equal to the greater of: (1) actual contributions paid by the agency in fiscal year 2019/2020, or (2) the agency's annualized 60-month average of compensation reported to the Systems prior to June 30, 2019 multiplied by 49.47%. Contributions will increase by 1.50% each future year and will continue until the full actuarial cost has been paid for a period not to exceed 30 years. In other words, there are situations where an agency is required to make installments for 30 years, but the agency will not completely pay the full actuarial cost of its cessation liability. However, for agencies that elect a Soft Freeze, the initial annual installment will be increased such that the liability is fully financed over 30 years.

Summary of Timeline

The table below provides a summary of GRS' proposed timeline to perform the cessation calculations under HB 1, which includes important statutory deadlines.

Date(s)	Action
(1)	**(2)**
December 2019	KRS Board adopts the June 30, 2019 actuarial valuation.
December 30, 2019	Deadline for agency to request an estimate of its cessation estimate.
January 31, 2020 through February 29, 2020	KRS is required to provide agencies an estimate of the cost of cessation within 60 days of the request but not before January 31, 2020.
April 1, 2020 through April 30, 2020	Agencies submit a resolution to cease participation in KERS-NH under the window provided by HB 1. Prior to May 1, 2020, an agency may rescind a previously submitted election to cease participation.
June 30, 2020	Effective cessation date.
December 2020	KRS Board adopts the June 30, 2020 actuarial valuation.
January 31, 2021 through March 31, 2021	GRS finalizes the cessation cost for the agencies that elected to cease participation in KRS.
June 30, 2021	Deadline for agency to make its lump sum payment of the actuarial cost, if elected.

Census Data Used in Calculations

For purposes of providing the agencies a preliminary cessation cost, GRS will use the census data provided by the agencies to KRS as of June 30, 2019 for preparing the June 30, 2019 actuarial valuation. In our professional opinion, this census data is sufficient and reliable for purposes of determining the liability attributable to the agencies. Similarly, calculation of the final cessation liability for each agency that elects to cease participation in KERS-NH will be based on the census data as of June 30, 2020 that is provided by the agencies to KRS for purposes of preparing the June 30, 2020 actuarial valuation.

Calculation Methodology and Assumptions

The first step is to determine the market value of assets that are allocated to each agency. This is determined by first identifying the overall funded ratio of KERS-NH on a market value of asset basis, which will be documented in the June 30, 2020 actuarial valuation report. Next we calculate the actuarial accrued liability based on the same assumptions and methods used to perform the June 30, 2020 actuarial valuation for each eligible agency based on its current and former employees. This liability calculation will be done on an “on-going” basis, meaning that it reflects the liability of the agency if the agency does not elect to cease participation in KERS-NH and based on annual valuation assumptions. Finally, the market value of assets allocated to this entity is equal to the “on-going” liability of each agency multiplied by the overall funded ratio of KERS-NH. This is determined separately for the Retirement and Insurance funds. The preliminary cessation cost will be based on the funded ratio documented in the 2019 valuation report and the “on-going” liability calculated as of June 30, 2019.

Next, the liability for each agency that ceases participation in KERS-NH will be calculated under all four options provided by HB 1 for the preliminary calculation and under the elected option for the final calculation. The options are described below.

1. Hard Freeze with actuarial cost paid as a lump sum
2. Soft Freeze with actuarial cost paid as a lump sum
3. Hard Freeze with actuarial cost paid in installments
4. Soft Freeze with actuarial cost paid in installments
5. Remain a participating employer in KERS-NH (default selection in absence of a valid election)

The calculation of the full actuarial cost for each option is based on an effective cessation date of June 30, 2020. For the purposes of calculating the agency’s cessation cost under HB 1, each agency’s liability is equal to the liability attributable to: (1) the accrued benefits earned by members who are currently employees of the agency, (2) accrued benefits payable to inactive members whose last employment with a participating agency in KERS-NH was with the agency, and (3) members who were last employed by the agency when the member commenced his/her retirement allowance (which also includes former inactive members of the agency who commenced their retirement benefit after satisfying the retirement eligibility requirements). The actuarial cost for the agency will not include any liability attributable to members who have elected to roll over their employee contributions into a different retirement plan. The calculated liability amounts also do not include any liability attributable to former employees of the agency who subsequently became employed by another participating employer in

KERS. There is also no liability attributable to the agency for retirement benefits that a member may have earned while employed with another employer that participated in a different retirement system, such as the County Employees Retirement System (CERS); however a member's CERS service, if any, is used in the calculation of the member's retirement eligibility to commence their benefit in KERS.

If an agency elects a Hard Freeze option, active employees' accrued benefit will be determined as of the June 30, 2020. The preliminary estimate as of June 30, 2019 will take into account expected service and salaries that will be earned through June 30, 2020. Employees who are eligible to commence their retirement and health insurance benefits are assumed to do so at July 1, 2020. Employees who are not eligible to commence their benefits at July 1, 2020 are assumed to commence their retirement and insurance benefits at the first age they will satisfy the normal retirement eligibility criteria. If an agency elects a Soft Freeze option, active employees will be assumed to accrue benefits and to terminate, retire, become disabled, or die as predicted by the actuarial assumptions used for the June 30, 2020 actuarial valuation report. Vested inactive members will be assumed to commence their retirement and insurance benefits at the first age they will satisfy the normal retirement eligibility criteria. Non-vested inactive members who a due a refund are assumed to receive refunds of their member contributions at June 30, 2020.

The discount rate used to calculate the cessation cost shall be equal to 4.50%, 3.50%, 3.50%, and 3.00% under the Hard Freeze paid as a lump sum, the Soft Freeze paid as a lump sum, the Hard Freeze paid in installments, and the Soft Freeze paid in installments, respectively. Except where noted above, all other assumptions and methods used to determine this preliminary calculation of the cessation cost are based on the June 30, 2020 actuarial valuation (including the 2021 health insurance premiums).

Early in the process of the General Assembly developing cessation legislation, a group of employers suggested that the calculation of an agency's liability be calculated such that the agency's liability for each current and former employee be based on pro-rating the member's total liability by a fraction where the numerator is the member's service with the agency and denominator is the member's service with KERS-NH. This concept is theoretically fair, but administratively unfeasible to execute. This process could be accomplished for an agency's current employees because the data is more readily available. However, it is our understanding that KRS may be unable to identify all the former employers of all of the inactive and retired employees. Also, data may not be available to allocate a member's service by agency. In all such cases, this would understate the liability and actuarial cost for the agency ceasing participation in KERS-NH due to incomplete or missing information.

Possible Implications of Additional Cessation Options

We believe the proposed process and methodology contained in this memo for calculating an agency's actuarial cost comply with the cessation provisions established under HB 1 and the proposed timeline aligns with the timeline used for determining the actuarial cost for agencies who have previously elected to cease participation in KERS-NH under the cessation provisions under KRS Section 61.522, as amended by HB 351.

The cessation window provided by HB 1 gives agencies five options (the four cessation options and remaining a participating employer in KERS-NH), each having a different financial cost and payment option. An agency that ceases participation in KERS-NH outside of this window is currently faced with only two options under the current cessation provisions; it may choose to continue to participate in KERS-NH or elect to cease participation by a Hard Freeze and paying its full actuarial cost as a one-time lump-sum payment. In addition, KERS-NH may involuntarily cease an agency's participation. Based on our experience in performing cessation liability calculations for KRS and other Statewide retirement systems, there will be differences between the preliminary and final actuarial cost due to investment and demographic (e.g. salary increases, retirements, service purchases, termination, mortality, etc.) experience.

The cost uncertainty due to potential differences between the preliminary and final actuarial cost and the additional options under the HB 1 cessation window may increase the difficulty of the decision making process for some agencies. **It is likely that some agencies will elect a cessation option based on a targeted fiscal cost and will understandably rely heavily on the preliminary actuarial cost, which could be materially different than the final actuarial cost. The final cost could be greater or less than the preliminary cost and it is possible that some agencies would elect a different cessation option based on the final actuarial cost than they would under the preliminary actuarial cost.** Or there could be instances where the final cost is greater than the preliminary cost and the agency can no longer afford its chosen cessation option. Note, we expect this issue to be minimal with respect to the Hard-Freeze installment election as the dollar amount of the annual installment is highly certain in the preliminary cost calculation and is relatively transparent to the agency; only the number of required installments from the agency is unknown under this option.

11.3

Daniel White and Janie Shaw are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

GRS Retirement Consulting
P: 469.524.0000 | F: 469.524.0003 | www.grsconsulting.com

January 31, 2020

Mr. David Eager
Executive Director
Kentucky Retirement Systems
1260 Louisville Road
Frankfort, KY 40601

Re: Preliminary Cessation Liability for EMPLOYER NAME under the House Bill 1 (2019 Special Session)

Dear Mr. Eager:

Below are the results of the calculation of the preliminary actuarial cost associated with the cessation of EMPLOYER NAME from the Kentucky Employees Retirement System (KERS) under the provisions established in subsection (8) of KRS 61.522. These statutes allow an eligible employer to voluntarily cease participating in KERS effective June 30, 2020 under different provisions than are generally provided by KRS 61.522. An employer must make election on or after April 1, 2020 but prior to May 1, 2020.

The analysis contained in this letter is a preliminary cessation liability as of June 30, 2020 based on financial and membership data available as of June 30, 2019. If the employer elects to withdraw from KERS, a final actuarial cost will be provided in early 2021 that is based on plan assets, actuarial assumptions, plan provisions and census information as of June 30, 2020. The final actuarial cost could vary significantly from the preliminary calculation contained in this letter.

Table 1: Summary of Cessation Cost

	Cessation Cost as of June 30, 2020	Annual Payment Beginning July 1, 2020	Discount Rate used to Calculate Cessation Cost	Current Employees Continue Participating?
Option #1 (Hard Freeze, Lump Sum)	$X,XXX,XXX	N/A (lump sum required)	4.50%	No
Option #2 (Soft Freeze, Lump Sum)	$X,XXX,XXX	N/A (lump sum required)	3.50%	Yes
Option #3 (Hard Freeze, Installments)	$X,XXX,XXX	$XXX,XXX [1] (payable for XX years)	3.50%	No
Option #4 (Soft Freeze, Installments)	$X,XXX,XXX	$XXX,XXX [1] (payable for XX years)	3.00%	Yes
No Election to Cease Participation	N/A	$XXX,XXX [2]	N/A	Yes

[1] Amount increases by 1.5% annually

[2] Estimated annual required contribution based on the actuarially determined contribution rate of XX.XX% calculated in the June 30, 2019 actuarial valuation and FY 18/19 payroll. Actual contributions will be based on the contribution rate budgeted by the General Assembly and actual payroll for FY 20/21.

Cessation Option #1: Hard Freeze and pay actuarial cost as a lump-sum payment

Under cessation option #1, all active employees will become inactive members effective June 30, 2020. The employees' accrued benefit will be frozen and they will cease earning additional service credit applicable for retirement eligibility. The cessation cost is determined as of June 30, 2020 and must be paid in a one-time lump-sum payment prior to July 1, 2021 (with interest from July 1, 2020 to the payment date based on a 5.25% annual rate for the retirement fund and a 6.25% annual rate for the insurance fund).

Table 2: Cessation Cost under Option #1

	Retirement Fund	Insurance Fund	Total
1. Full Actuarial Cost for Active Members	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
2. Full Actuarial Cost for Vested Inactive Members	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
3. Full Actuarial Cost for Inactive Members due a Refund	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
4. Full Actuarial Cost for Members in Receipt of Benefits	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
5. Full Actuarial Cost: (1) + (2) + (3) + (4)	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
6. Allocated Market Value of Assets	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
7. Unfunded Actuarial Cessation Cost: (5) – (6)	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
8. Lump Sum Payable on June 30, 2021[1]	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX

[1] Illustrative purposes only. Lump sum payment may be made on any date prior to June 30, 2021.

Cessation Option #2: Soft Freeze and pay actuarial cost as a lump-sum payment

Under cessation option #2, active employees earning benefits in the KERS Non-Hazardous Hybrid Cash Balance plan will become inactive members effective June 30, 2020. These employees' accrued benefit will be frozen and they will cease earning additional service credit applicable for retirement eligibility. Active employees earning Tier 1 or Tier 2 benefits will continue to contribute and earn service credit for as long as they remain employed by the employer in a regular full-time position that is eligible to participate in KERS. The cessation cost is determined as of June 30, 2020 and must be paid in a one-time lump-sum payment prior to July 1, 2021 (with interest from July 1, 2020 to the payment date based on a 5.25% annual rate for the retirement fund and a 6.25% annual rate for the insurance fund).

Table 3: Cessation Cost under Option #2

	Retirement Fund	Insurance Fund	Total
1. Full Actuarial Cost for Active Members	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
2. Full Actuarial Cost for Vested Inactive Members	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
3. Full Actuarial Cost for Inactive Members due a Refund	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
4. Full Actuarial Cost for Members in Receipt of Benefits	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
5. Full Actuarial Cost: (1) + (2) + (3) + (4)	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
6. Allocated Market Value of Assets	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
7. Unfunded Actuarial Cessation Cost: (5) – (6)	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
8. Lump Sum Payable on June 30, 2021[1]	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX

[1] Illustrative purposes only. Lump sum payment may be made on any date prior to June 30, 2021.

Cessation Option #3: Hard Freeze and pay actuarial cost in installments

Under cessation option #3, all active employees will become inactive members effective June 30, 2020 and will cease earning additional service credit applicable for the calculation of the benefit amount and for retirement eligibility. The cessation cost is determined as of June 30, 2020 and must be paid in monthly installments beginning July 1, 2020. The annual amount paid from July 1, 2020 through June 30, 2020 will be equal to the greater of:

(1) Actual contributions paid by the employer from July 1, 2019 through June 30, 2020 and;
(2) 49.47% times the annualized average of creditable compensation reported to the system over the last 60 months occurring prior to July 1, 2019.

The total annual payment due will be increased by 1.50% each year until the unfunded actuarial cessation cost is paid for in full or until 30 years of payments are made. Annual interest at a rate equal to 5.25% for the retirement fund and 6.25% for the insurance fund will be applied.

Table 4: Cessation Cost under Option #3

	Retirement Fund	Insurance Fund	Total
1. Full Actuarial Cost for Active Members	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
2. Full Actuarial Cost for Vested Inactive Members	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
3. Full Actuarial Cost for Inactive Members due a Refund	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
4. Full Actuarial Cost for Members in Receipt of Benefits	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
5. Full Actuarial Cost: (1) + (2) + (3) + (4)	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
6. Allocated Market Value of Assets	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
7. Unfunded Actuarial Cessation Cost: (5) – (6)	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
8. Actual contributions for FY 19/20	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
9. 49.47% x Annualized 60-month average payroll	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
10. Annual Payment for FY 20/21: Greater of (8) and (9)	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX

Table 5: Annual Payment[1] Schedule under Option #3

FY 20/21	$ XXX,XXX	FY 28/29	$ XXX,XXX	FY 36/37	$ XXX,XXX	FY 44/45	$ XXX,XXX
FY 21/22	XXX,XXX	FY 29/30	XXX,XXX	FY 37/38	XXX,XXX	FY 45/46	XXX,XXX
FY 22/23	XXX,XXX	FY 30/31	XXX,XXX	FY 38/39	XXX,XXX	FY 46/47	XXX,XXX
FY 23/24	XXX,XXX	FY 31/32	XXX,XXX	FY 39/40	XXX,XXX	FY 47/48	XXX,XXX
FY 24/25	XXX,XXX	FY 32/33	XXX,XXX	FY 40/41	XXX,XXX	FY 48/49	XXX,XXX
FY 25/26	XXX,XXX	FY 33/34	XXX,XXX	FY 41/42	XXX,XXX	FY 49/50	XXX,XXX
FY 26/27	XXX,XXX	FY 34/35	XXX,XXX	FY 42/43	XXX,XXX		
FY 27/28	XXX,XXX	FY 35/36	XXX,XXX	FY 43/44	XXX,XXX		

[1] Annual payments calculated separately for the retirement and insurance plan and are each assumed to increase 1.50% annually

Cessation Option #4: Soft Freeze and pay actuarial cost in installments

Under cessation option #4, active employees earning benefits in the KERS Non-Hazardous Hybrid Cash Balance plan will become inactive members effective June 30, 2020. These employees' accrued benefit will be frozen and they will cease earning additional service credit applicable for retirement eligibility. Active employees earning Tier 1 or Tier 2 benefits will continue to contribute and earn service credit for as long as they remain employed by the employer in a regular full-time position that is eligible to participate in KERS. The unfunded actuarial cessation cost is determined as of June 30, 2020 and must be paid in monthly installments beginning July 1, 2020. The annual amount paid from July 1, 2020 through June 30, 2020 will be equal to the greater of:

(1) Actual contributions paid by the employer from July 1, 2019 through June 30, 2020 and;
(2) 49.47% times the annualized average of creditable compensation reported to the system over the last 60 months occurring prior to July 1, 2019 and;
(3) Annual contribution necessary to pay off the cessation cost within 30 years.

The total annual payment due will be increased by 1.50% each year until the unfunded actuarial cessation cost is paid for in full. Annual interest at a rate equal to 5.25% for the retirement fund and 6.25% for the insurance fund will be applied.

Table 6: Cessation Cost under Option #4

	Retirement Fund	Insurance Fund	Total
1. Full Actuarial Cost for Active Members	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
2. Full Actuarial Cost for Vested Inactive Members	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
3. Full Actuarial Cost for Inactive Members due a Refund	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
4. Full Actuarial Cost for Members in Receipt of Benefits	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
5. Full Actuarial Cost: (1) + (2) + (3) + (4)	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
6. Allocated Market Value of Assets	X,XXX,XXX	X,XXX,XXX	X,XXX,XXX
7. Unfunded Actuarial Cessation Cost: (5) – (6)	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
8. Actual contributions for FY 19/20	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
9. 49.47% x Annualized 60-month average payroll	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX
10. Annual Payment for FY 20/21: Greater of (8) and (9) unless payment must be increased to pay for cost within 30 years	$ X,XXX,XXX	$ X,XXX,XXX	$ X,XXX,XXX

Table 7: Annual Payment Schedule under Option #4

FY 20/21	$ XXX,XXX	FY 28/29	$ XXX,XXX	FY 36/37	$ XXX,XXX	FY 44/45	$ XXX,XXX
FY 21/22	XXX,XXX	FY 29/30	XXX,XXX	FY 37/38	XXX,XXX	FY 45/46	XXX,XXX
FY 22/23	XXX,XXX	FY 30/31	XXX,XXX	FY 38/39	XXX,XXX	FY 46/47	XXX,XXX
FY 23/24	XXX,XXX	FY 31/32	XXX,XXX	FY 39/40	XXX,XXX	FY 47/48	XXX,XXX
FY 24/25	XXX,XXX	FY 32/33	XXX,XXX	FY 40/41	XXX,XXX	FY 48/49	XXX,XXX
FY 25/26	XXX,XXX	FY 33/34	XXX,XXX	FY 41/42	XXX,XXX	FY 49/50	XXX,XXX
FY 26/27	XXX,XXX	FY 34/35	XXX,XXX	FY 42/43	XXX,XXX		
FY 27/28	XXX,XXX	FY 35/36	XXX,XXX	FY 43/44	XXX,XXX		

[1] Annual payments calculated separately for the retirement and insurance plan and are each assumed to increase 1.50% annually

Cessation Option #5: Continue to remain a participating employer in KERS Non-Hazardous System

Absent any election to cease participation in the KERS Non-Hazardous System by April 30, 2020, the employer will remain a participating employer in the System and all current and future eligible employees will earn benefits in KERS. Absent any future legislation, the employer will contribute the full-board certified contribution rate, which is 83.43% of pay for fiscal year ending June 30, 2019, on the payroll of employees earning benefits in the System. This contribution rate may increase or decrease in future years depending on future plan experience as well as possible future legislation enacted by the General Assembly.

Calculation Process and Actuarial Assumptions

The actuarial calculations were performed in accordance with KRS 61.522, as amended by HB 1 passed during the 2019 Special Session. For the purposes of this calculation, the effective cessation date is assumed to be June 30, 2020 but the analysis is based on financial and membership data as of June 30, 2019. The total actuarial cost for all current and former employees for an employer is calculated based on the assumptions and methods described below. The allocated market value of assets is subtracted from the total actuarial cost to calculate the final cessation cost under each option.

For members active as of June 30, 2019 who will not accrue additional service after the cessation date, the members' accrued benefit is determined as of the cessation date, taking into account expected service and salaries that will be earned through June 30, 2020. Employees who are eligible to commence their retirement and health insurance benefits are assumed to do so July 1, 2020. Employees who are not eligible to commence their benefits July 1, 2020 are assumed to commence their retirement and insurance benefits at the first age they will satisfy the retirement eligibility criteria. Members active as of June 30, 2019, who will accrue additional service after the cessation date, are assumed to accrue benefits and to terminate, retire, become disabled, or die as predicted by the actuarial assumptions documented in the June 30, 2019 actuarial valuation report.

Vested members who are inactive as of June 30, 2019 are assumed to commence their retirement and insurance benefits at the first age they will satisfy the retirement eligibility criteria. Non-vested inactive members who a due a refund are assumed to receive refunds of their member contributions at July 1, 2020.

The discount rate used to calculate the cessation cost shall be equal to 4.50%, 3.50%, 3.50%, and 3.00% under cessation options #1, #2, #3, and #4, respectively. Except where noted above, all other assumptions and methods used to determine this preliminary calculation of the cessation cost are based on the June 30, 2019 actuarial valuation (including the 2020 health insurance premiums).

The final cessation cost will be based on membership data as of June 30, 2020, actuarial assumptions and methods used in the June 30, 2020 actuarial valuation, and the yield on a 30-year Treasury bond as of June 30, 2020 (if greater than the statutory discount rate minimums).

In order to identify the allocated market assets, the overall funded ratio of the retirement and insurance funds on a market value of asset basis is determined by dividing the actuarial accrued liability for the each fund on an ongoing basis (i.e. assuming no employers cease participating in the System) by the market value of assets. Then, the actuarial accrued liability for only employees of EMPLOYER NAME is determined on an ongoing basis (based on the actuarial valuation assumptions, including the valuation discount rate). Finally, the market value of assets allocated to EMPLOYER NAME is equal to the actuarial accrued liability on an ongoing basis multiplied by the overall funded ratio of each fund. The table on the following page shows the development of the allocated market value of assets for each fund. The calculations on the following page are also based on assets and liability as of June 30, 2019. The final cessation cost will be based on assets and liability as of June 30, 2020.

Table 8: Allocation of the Market Value of Assets

	Retirement Fund	Insurance Fund
1. Overall Fund Funded Ratio	XX.XX%	XX.XX%
2. On-Going Actuarial Accrued Liability for Employer	$ X,XXX,XXX	$ X,XXX,XXX
3. Allocated Market Value of Assets: (1) x (2)	$ X,XXX,XXX	$ X,XXX,XXX

Membership Data

These calculations were based on the census data provided for the June 30, 2019 actuarial valuation. A summary of the census data used in these calculations can be found below. The final cessation cost will be based on census data as of June 30, 2020.

Table 9: Summary of Census Data

Active Members	
Number	XX
Average Age at Cessation Date	XX
Average Service at Cessation Date	XX
Average Annual Salary	$ XX,XXX

Vested Inactive Members	
Number	XX
Average Age at Cessation Date	XX
Average Annual Benefit	$ XX,XXX

Members in Receipt of Benefits	
Number	XX
Average Age at Cessation Date	XX
Average Annual Benefit	$ XX,XXX

Inactive Members due a Refund	
Number	XX
Accumulated Contributions	$ XX,XXX

For purposes of this analysis, the calculations only include liability attributable to: (1) the accrued benefits payable to members who are currently actively employed with EMPLOYER NAME, (2) accrued benefits payable to inactive members in KERS whose last employment with a participating employer in KERS was with EMPLOYER NAME, and (3) members who were last employed with EMPLOYER NAME when they commenced their retirement allowance (which also includes former inactive members with EMPLOYER NAME who commenced their retirement benefit after satisfying the retirement eligibility requirements). The calculated liability amounts do not include any liability attributable to members who earned service with EMPLOYER NAME and subsequently became employed by another participating employer in KERS. There is also no liability attributable for retirement benefits that a member may have earned while employed with another employer that participated in a different retirement system, such as the County Employees Retirement System (CERS).

Certification

All of our work conforms with generally accepted actuarial principles and practices and the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the methodology and processes used in these calculations are reasonable and comply with the applicable requirements of Kentucky State law.

The undersigned are independent actuaries and consultants. Mr. White is an Enrolled Actuary and both Mr. White and Ms. Shaw 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. Both consultants below are experienced in performing valuations for large public retirement systems.

Sincerely,

Daniel J. White, FSA, EA, MAAA Senior Consultant	Janie Shaw, ASA, MAAA Consultant

cc: Rebecca Adkins, KRS
Mark Blackwell, KRS
Erin Surratt, KRS

11.3

KENTUCKY RETIREMENT SYSTEMS
BOARD OF TRUSTEES
PER DIEM AND REIMBURSEMENT POLICY

Approval Date: November 14, 2019~~August 19, 2004~~

Section 1: Scope

A. This policy is enacted pursuant to KRS 61.645, which provides that the Board of Trustees ("Board") of the Kentucky Retirement Systems ("KRS") is permitted to adopt procedures necessary to conduct the business of KRS as needed. As well, this policy is enacted consistent with the Bylaws of the Board of Trustees of KRS, which provides for reimbursement of the Board in their official duties for KRS.

B. Previous revisions to the policies governing the payment of per diems and travel expenses were adopted on August 17, 1995, February 11, 1999~~, and~~ November 18, 1999 and August 19, 2004. This policy shall replace all previous versions, whether specifically named or not.

C. Pursuant to KRS 16.640, 61.645(7), and 78.780(1), Board members who do not otherwise receive a salary from the State Treasury shall receive a per diem for each day they are in session or on official duty, and shall be reimbursed for their actual and necessary expenses in accordance with state administrative regulations and standards.

D. All payments of per diem and/or reimbursement under this policy shall be made consistent with the KRS Travel Policy and the KRS Procurement Card Policy adopted by the Board and the Executive Branch Code of Ethics as set forth in KRS Chapter 11A.

E. In every event, members of the Board of KRS shall endeavor to conduct the official affairs of KRS in such a manner as to minimize the cost of providing efficient guidance and administration of the funds entrusted to the Board.

F. Nothing in this Policy shall be interpreted so as to prohibit or discourage members of the Board from attending all official functions of the Board or its Committees, or legislative or other functions, which such member wishes to attend at his or her own expense.

Section 2: Official Duty

A. "In Session" shall include the following:
   (1) Meetings of the full Board;
   ~~(2)~~ Meetings of Committees of which the Board member is a member or alternate (if needed to make a quorum)~~; and~~
   ~~(3)~~(2) ~~Meetings of Committees of which the Board member is not also a member.~~

B. "Official Duty" shall include the following:
   (1) Preparation for Board or Committee meetings;

(2) New Member Orientation at the KRS offices in Frankfort;
(3) Self selected training and ~~T~~training seminars in an amount not to exceed the training requirements in the Board Education Policy; and
(4) Sessions of the General Assembly, the Legislative Research Commission, or another legislative subcommittee at the invitation of the Legislature, limited to the Chair or Vice Chair only.

C. The following are not considered to be "in session" or "on official duty" in order to permit the Board member to seek a per diem reimbursement, unless specific permission is given by the Chair and the Executive Director or designee:
(1) Group or Association meetings;
(2) Membership meetings;
(3) Other constituent meetings; and
(4) When requested to appear by a court or other government entity.

D. Board members attending functions as described in Section 2, subsection (C) above shall only be considered to be official duty when attendance is at the written request, invitation or permission of the Chair of the Board and the Executive Director or designee. Approval will only be granted for a reasonable number of these functions per year.

E. If the Chair requests authorization for functions as provided under Section 2, subsections (C) and (D) above, the Vice Chair shall approve such requests.

Section 3: Authorization

A. Prior to attending a non-KRS and/or non-State (e.g. industry conference) ~~the~~ function, a Board member shall obtain authorization to be reimbursed for attending such a function on official business of KRS by the Executive Director or designee.

B. Authorization shall be obtained on a Request for Travel and Per Diem form, and should contain the following information:
(1) Name of Board member requesting authorization;
(2) Purpose of the function;
(3) Vicinity and length of time of travel;
(4) Estimated cost of travel;
(5) Signature of person requesting authorization; and
(6) Signature of Executive Director or designee.

C. Attendance at full Board meetings or Committee meetings of which the Board member is a member~~ is~~ requires~~d and~~ no separate authorization.~~ is required for these meetings.~~

Section 4: Preparation for Meetings

A. Preparation for a meeting of the Board or a Committee of the Board shall include time spent reviewing written or video transcripts of formal administrative hearings or the records, exhibits, documents and memoranda provided to members of the Board or Committee by KRS prior to each Board or Committee meeting.

~~(2) Reimbursement for Board Meetings shall be based upon the number of hours spent in preparation, not to exceed three (3) hours.~~

~~(3) Reimbursement for the Disability Appeals Committee or the Administrative Appeals Committee shall be based upon the number of hours spent in preparation, not to exceed four (4) hours per case.~~

~~(4) Reimbursement for other Committees shall be based upon the number of hours spent in preparation, not to exceed two (2) hours.~~

~~E.~~B. Members shall be compensated at an hourly rate equal to the per diem divided by seven and one-half (7 ½) hours. Each member shall report the number of hours spent in preparation on the Preparation Reimbursement Form provided by KRS.

~~F.~~C. Forms shall be submitted to the Chair of the Board at the Board Meeting or the Chair of the Committee at the Committee meeting. The Chair of the Board or of the Committee or~~and~~ the Executive Director or designee shall review all forms and approve all hours for payment as deemed appropriate for the required task. ~~If the Chair of the Board or of a Committee requests payment for preparation time as provided above, the Vice Chair of the Board or of the Committee shall approve such requests.~~

Section 5: Reimbursement

A. Following the function, all travel expenses should be timely claimed on the KRS Travel Voucher Form. In no event shall a member be reimbursed by KRS for any expenses also claimed reimbursable from another state agency.

B. Actual and necessary travel expenses shall be paid in accordance with the Travel Policy adopted by the Board.

C. Twice a month, the Executive Director or designee shall prepare the Per Diem Compensation Schedule and approve such payments.

D. Reimbursement will be made only for individuals who are doing business on behalf of KRS.

E. All reimbursement under this Section must be made consistent with the requirements of the Executive Branch Code of Ethics, KRS Chapter 11A. Please refer to the Executive Branch Ethics Commission web site for more information at: http://ethics.ky.gov/.

Section 6: Forms

A. The following forms are attached and are incorporated by reference.

(1) Request for Travel and Per Diem
(2) Preparation Reimbursement Form - General
(3) Preparation Reimbursement Form – DAC/AAC
(4) KRS Travel Voucher

(5) Per Diem Compensation Schedule

B. These forms may be updated and amended as necessary without effect to this Policy.