County Employees Retirement System
Actuarial Committee – Special Meeting
November 2, 2022 at 2:00 PM ET
Live Video Conference/Facebook Live

AGENDA

1.	**Call to Order**	**Michael Foster**
2.	**Opening Statement**	**Legal Services**
3.	**Roll Call**	**Sherry Rankin**
4.	**Public Comment**	**Sherry Rankin**
5.	**Approval of Minutes* -- March 14, 2022**	**Michael Foster**
6.	**Draft Actuarial Evaluation**	**Danny White, GRS** **Janie Shaw, GRS**
7.	**Discount Rate Discussion**	
	a. Introduction	**Michael Foster**
	b. Review of Economic Assumptions	**Danny White, GRS** **Janie Shaw, GRS**
	c. Forward Looking Return Expectations—Wilshire	**David Lindberg** **Craig Morton**
8.	**Strategic Planning Process***	**Michael Foster**
9.	**Committee Meeting Date***	**Michael Foster**
10.	**ADJOURN***	**Michael Foster**

Committee Action May Be Taken

MINUTES OF MEETING
COUNTY EMPLOYEES RETIREMENT SYSTEM
SPECIAL CALLED ACTUARIAL COMMITTEE MEETING
MARCH 14, 2022 AT 2:00 P.M.
VIA LIVE VIDEO TELECONFERENCE

At the special called meeting of the Actuarial Committee of the County Employees Retirement System Board of Trustees held on March 14, 2022 the following members were present: Michael Foster – Chair, Dr. Merl Hackbart, and Dr. Patricia Carver. Other Trustees present included George Cheatham and Betty Pendergrass. Staff members present were CERS CEO Ed Owens, III, KRS CEO John Chilton, David Eager, Erin Surratt, Victoria Hale, Kristen Coffey, Connie Davis, Cassandra Weiss, Steven Herbert, Ashley Gabbard, Glenna Frasher, and Sherry Rankin. Others present included Danny White and Janie Shaw with GRS.

Mr. Foster called the meeting to order.

Ms. Hale read the Legal Opening Statement.

Ms. Rankin took Roll Call.

There being no *Public Comment* submitted, Mr. Foster introduced agenda item *Approval of Minutes from the November 8, 2021 Meeting.* A motion was made by Dr. Hackbart and seconded by Dr. Carver to approve the minutes as presented. The motion passed unanimously.

Mr. Foster introduced agenda item *Economics Assumptions for Actuarial Valuation.* Mr. Danny White presented the Economics Assumptions for Actuarial Valuation for the County Employees Retirement Systems (CERS). Each year the Actuarial Committee reviews the price inflation, investment return, and payroll growth economic assumptions. Mr. White announced that the 2022 valuation recommended assumptions were as follows: price inflation will be 2.30%, investment return will be 6.25%, and payroll growth 2.00%. Mr. White indicated that these percentages have not changed from 2021. He shared a graph which illustrated the comparison of the price inflation assumption to sources of forward-looking expectations. He also reviewed the forward-looking capital market expectations and stated that five investment consultants are listed as sources for the data presented: BNY Mellon, J.P. Morgan, Mercer, NEPC, and Wilshire Associates. Mr. White added that Mercer and Wilshire Associates provided both short-term and long-term expectations. He stated that there has been a long-term downward trend of these capital market return assumptions and a march downward over the last ten years of lowering the expectations year over year. He stated that in 2022 there was a pause on this downward trend. Dr. Hackbart asked if consultants one and two were the same for the short-term and long-term expectations. Mr. White stated that they are blinded in order, lowest to highest. He added that additional investment consultants were listed last year, however, their data was not available at the time of the analysis. Dr. Hackbart asked if Mr. White was able to analyze to what extent the consultant observations or predictions compare to their accuracy of prior observations over the last ten year period. Mr. White said that BNY Mellon has a report which provides this data. Mr. White stated that he would follow up with Ms. Surratt to provide that data to the Committee. Next, payroll growth assumption was reviewed. Mr. White stated that covered payroll is positive and has averaged 1.1% over the last ten years. He advised that the 2% payroll growth assumption is still within a reasonable range but may need to be adjusted in the future. Dr. Hackbart asked Mr. White to provide the definition of covered payroll and active membership. He stated that covered payroll includes the salaries of membership that is reported to KPPA or the sum of the individuals who are earning benefits in the system. Active membership is the number of members who are earning benefits, in this case, as of June 30, 2022. Dr. Hackbart asked how the CERS assumptions compare to peers. Mr. White shared a distribution of investment return assumptions from fiscal year 2001 to present with the Committee. He explained the distribution graph and stated that he expects to see a downward trend in the return assumptions used by state retirement systems. Ms. Pendergrass presented a historical summary of the investment earnings and actuarial discount rate since fiscal year 2012. Mr. White added that this historical summary is relevant to review for historical purposes and is worthwhile. Dr. Carver asked why the discount rate would be lowered if returns have remained steady. Ms. Pendergrass stated that the investment asset allocation was reconfigured to take money out of equities and increase investments in fixed income in 2017. Dr. Hackbart asked if an asterisk could be added to the GRS letter/report assumption table indicating the definition of payroll growth. Mr. White stated that he will follow up with that adjustment to the report. Mr. Cheatham asked for clarification regarding the payroll assumption. He stated that local governments and school systems are operating on a relatively fixed income and with payroll growth due to market forces, the number of positions are decreasing while the payroll growth is increasing. Further, Mr. Cheatham asked if the assumption accounts for this. Mr. White stated that this assumption accounts for two factors: the amount of individual salaries and the underlying change in membership. Ms. Janie Shaw with GRS added that the current year was a good example of these changes in covered payroll and further explained the covered payroll growth graphs in the GRS letter/report. Mr. Cheatham asked if it is possible to split the payroll growth assumption of 2% and allocate a portion of that to a number of beneficiaries versus actual growth in wages. Mr. Cheatham added that he is seeing the number of positions decrease and agencies are making up for that with payroll growth in order to be competitive. Dr. Hackbart agreed and added that in many cases positions are being eliminated due to technological advances. Mr. White stated that they do not explicitly break out the components but rather they look at the sensitivity based on certain scenarios such as decreases in membership and population growth. Dr. Hackbart also asked if 'covered payroll' could be changed to 'membership payroll'. Mr. White explained that 'covered' is term used to describe a member's covered earned membership in the system, it is synonymous with 'membership' payroll and are interchangeable. Dr. Hackbart asked that this change be made throughout the GRS letter/report. Ms. Shaw added that this assumption projects the payroll is for the entire active population and is different than the assumption for an individual member. Ms. Pendergrass asked what the payroll growth percentage was prior to 2017. Mr. White advised that the payroll growth was 4%. Dr. Carver made a motion to recommend to the CERS Board that they adopt the recommended economic assumptions in the upcoming June 30, 222 Actuarial Valuation as proposed by GRS. Dr. Hackbart seconded the motion and the motion passed unanimously.

Mr. Foster introduced agenda item *Actuary RFP Process.* Ms. Erin Surratt presented the informational item in lieu of Ms. Rebecca Adkins. Ms. Surratt stated that according to KRS 61.505, KPPA must hire a single actuary consulting firm to provide services for KRS and CERS. The current contract for actuarial services has no more renewals, therefore, a request for proposal (RFP) was posted for these services for fiscal year 2023. Ms. Surratt reported the procurement team notified as many potential vendors as the team was aware of, including all that are registered with the Commonwealth of Kentucky. The RFP was released on February 21, 2022 and proposals are due by March 29, 2022 at 3:00 p.m. EST. Mr. Foster asked where and how the RFP was released. Ms. Weiss stated that per KRS 45A it is required that the RFP be posted using the State Procurement System and is available on the Vendor Self Service website and the KPPA website. Dr. Hackbart asked if a panel will be utilized to review the submitted proposals and make a selection. Ms. Weiss stated that once the proposals are reviewed and confirmed to have met all necessary requirements, they will be submitted to an evaluation team for scoring. The evaluators will be subject matter experts and KPPA employees. The vendor which receives the highest score will be offered a contract award. Mr. Foster asked if there will be a recommendation to the full Board prior to contract award. Mr. Weiss advised that once the contract award is made, the Board will be notified and may review the contract. Further, Mr. Foster asked who makes the award to the selected vendor. CERS CEO Ed Owens, III, stated that the awards for the actuarial services and custodial bank are made by KPPA, by statute. Additionally, the individual Boards have the opportunity to make an award for their investment advisor, by statute.

Dr. Carver made a motion and was seconded by Dr. Hackbart to adjourn the meeting. The motion passed unanimously.

Copies of all documents presented are incorporated as part of the Minutes of the Board of Trustees held on March 14, 2022, except documents provided during a closed session conducted pursuant to the open meetings act and exempt under the open records act.

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CERTIFICATION

I do certify that I was present at this meeting, and I have recorded the above actions of the Trustees 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

I, the Chair of the Board of Trustees of the County Employees Retirement System, do certify that the Minutes of Meeting held on March 14, 2022 were approved on November 2, 2022.

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Chair of the Board of Trustees

I have reviewed the Minutes of the March 14, 2022 Board of Trustees Meeting for content, form, and legality.

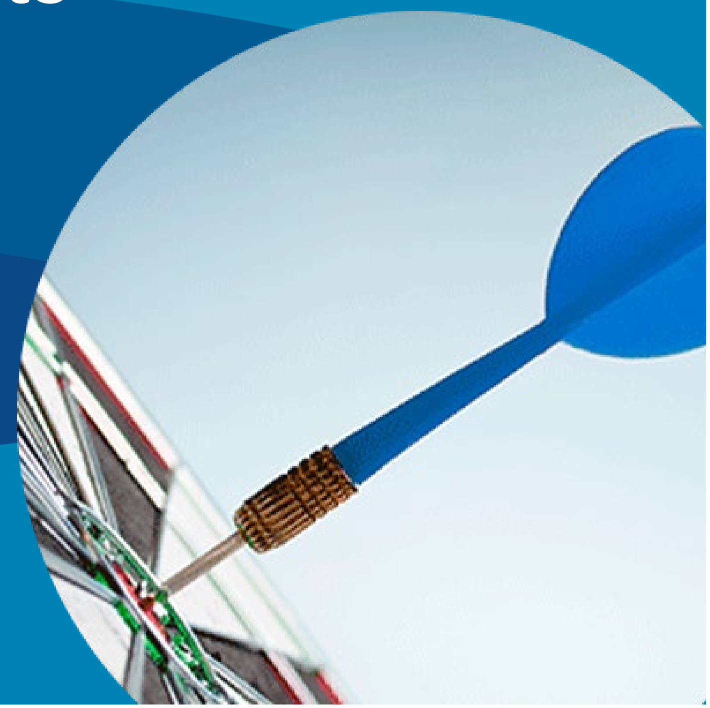
____

Executive Director
Office of Legal Services

County Employees Retirement System

2022 Actuarial Valuation Results

November 9, 2022



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

Comments on Valuation Results

- Overview of legislation passed in 2022
  - SB 209: increased health insurance benefits to members hired after July 1, 2003
- Change in active membership and covered payroll
  - Active membership increased across both funds
  - Non-Hazardous: 6.4% increase in covered payroll
  - Hazardous: 7.4% increase in covered payroll

Comments on Valuation Results

- FYE 2022 Investment Experience
  - -6% return on market value
    - Assumed rate of return: 6.25%
  - Fund assets $1,943M less than expected for CERS ($1,382M pension and $561M insurance)
  - $110M in asset gains recognized this year ($80M pension and $30M insurance)

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Comments on Valuation Results

- Retirement Fund Liability Experience
  - $482M loss for non-hazardous fund
  - $92M loss for hazardous fund
- Insurance Fund Liability Experience
  - $1,582M gain for both CERS insurance funds combined
  - Medicare premiums significantly decreased from 2022 to 2023.

Required Employer Contributions

	CERS Non-Hazardous		CERS Hazardous	
	2021 Val	2022 Val	2021 Val	2022 Val
(1)	(2)	(3)	(4)	(5)
Pension Fund	23.40%	23.34%	42.81%	41.11%
Insurance Fund	3.39%	0.00%	6.78%	2.58%
Actuarially Determined Contribution Rate, payable as a percentage of payroll[1]	**26.79%**	**23.34%**	**49.59%**	**43.69%**
Difference		**(3.45)%**		**(5.90)%**

[1] 2021 Valuation set the contribution rates for FYE2023. 2022 Valuation will be used to set the contribution rates for FYE2024.

Required Employer Contributions ($millions)

	CERS Non-Hazardous		CERS Hazardous	
	2021 Val FYE2023	2022 Val FYE2024	2021 Val FYE2023	2022 Val FYE2024
(1)	(2)	(3)	(4)	(5)
Actuarially Determined Employer Contribution				
Pension Fund	$ 604	$ 641	$ 253	$ 260
Insurance Fund	87	0	40	16
Total Contribution	**$ 691**	**$ 641**	**$ 293**	**$ 276**
Change in Contribution		**($50)**		**($17)**

Change in Required Employer Contributions
CERS Non-Haz – Actuarially Determined Contribution Rate

	CERS Non-Hazardous (% of pay)		
	Pension	Insurance	Total
Contribution Rate – 2021 Val	**23.40%**	**3.39%**	**26.79%**
Investment Experience	(0.19)%	(0.06)%	(0.25)%
Demographic Experience	0.13 %	(4.56)%	(4.43)%
Plan Change – SB 209	0.00 %	0.36 %	0.36 %
Total Change	(0.06)%	(4.26)%	(4.32)%
Contribution Rate – 2022 Val	**23.34%**	**0.00%[1]**	**23.34%**

Return on actuarial value of assets 7% pension & insurance

Significant decrease in 2023 Medicare premiums

[1] Contribution rate not less than 0.00%.

Change in Required Employer Contributions
CERS Haz – Actuarially Determined Contribution Rate

	CERS Hazardous (% of pay)		
	Pension	Insurance	Total
Contribution Rate – 2021 Val	**42.81%**	**6.78%**	**49.59%**
Investment Experience	(0.25)%	(0.17)%	(0.42)%
Demographic Experience	(1.45)%	(5.02)%	(6.47)%
Plan Change – SB 209	0.00 %	0.99 %	0.99 %
Total Change	(1.70)%	(4.20)%	(5.90)%
Contribution Rate – 2022 Val	**41.11%**	**2.58%**	**43.69%**

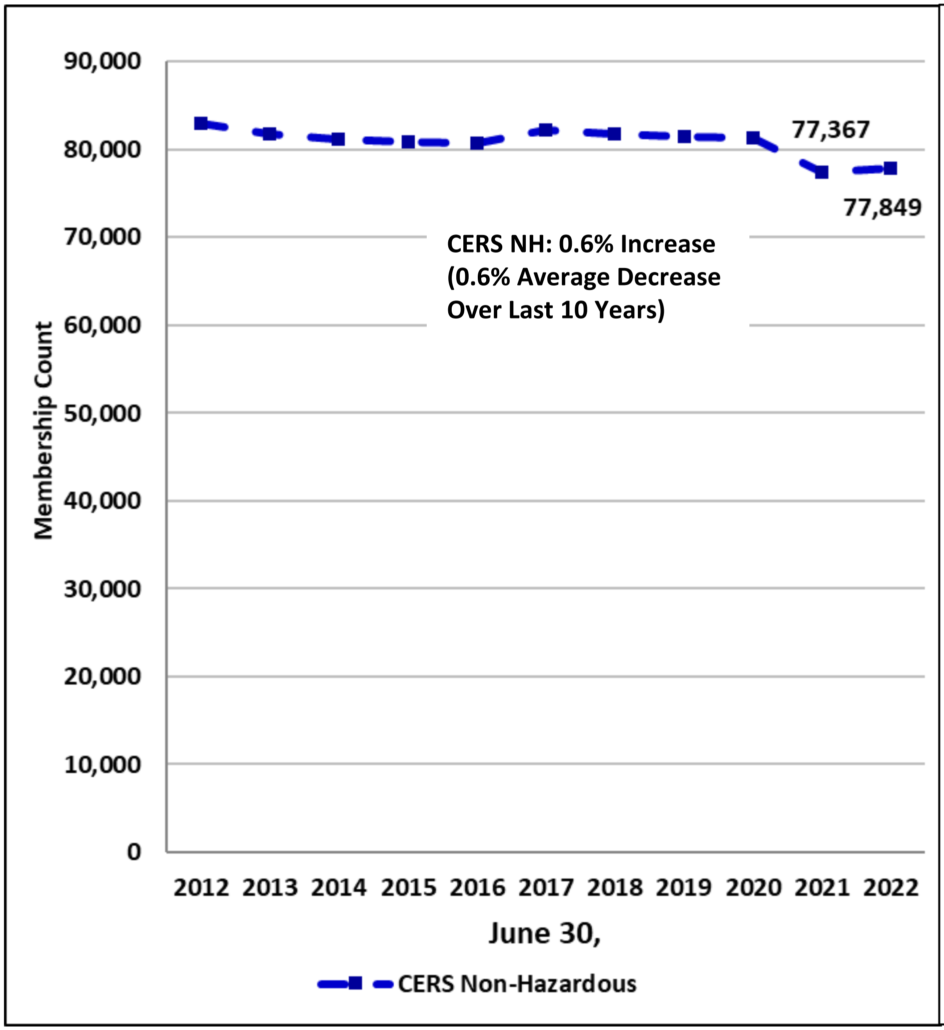
Return on actuarial value of assets 7% pension & insurance

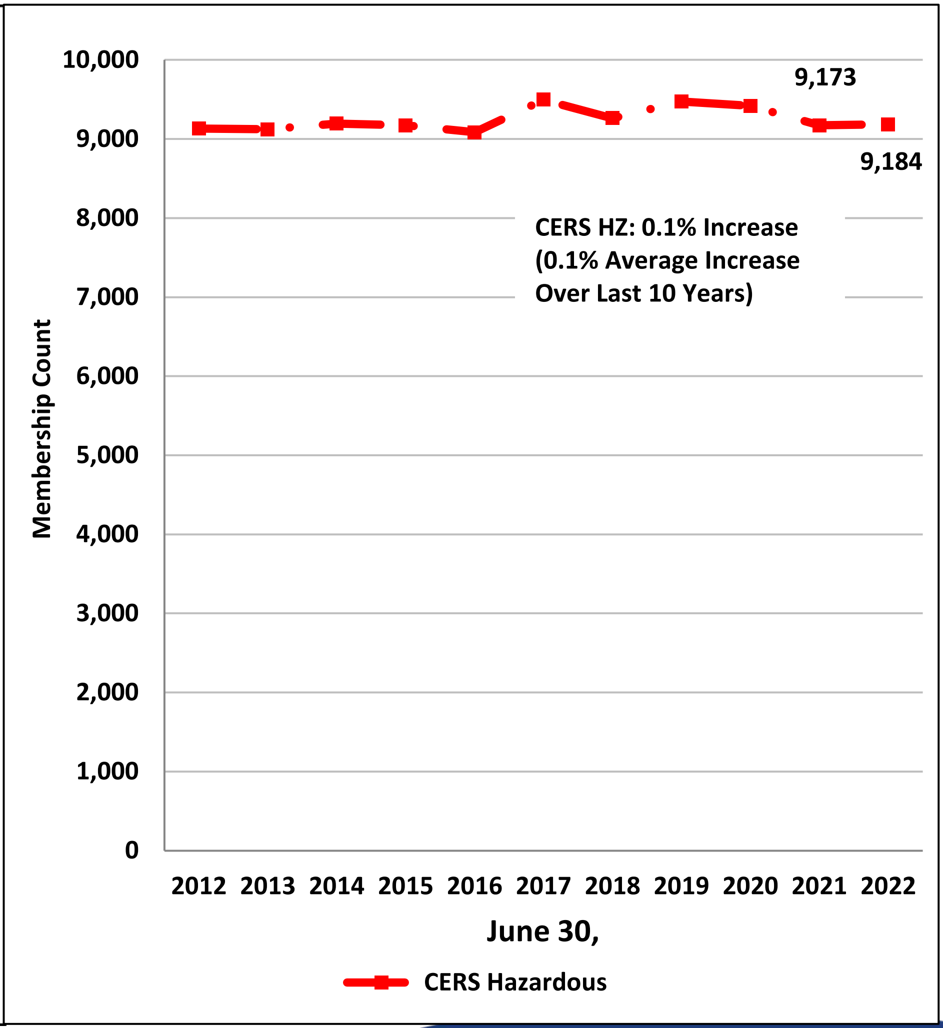
Significant decrease in 2023 Medicare premiums

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

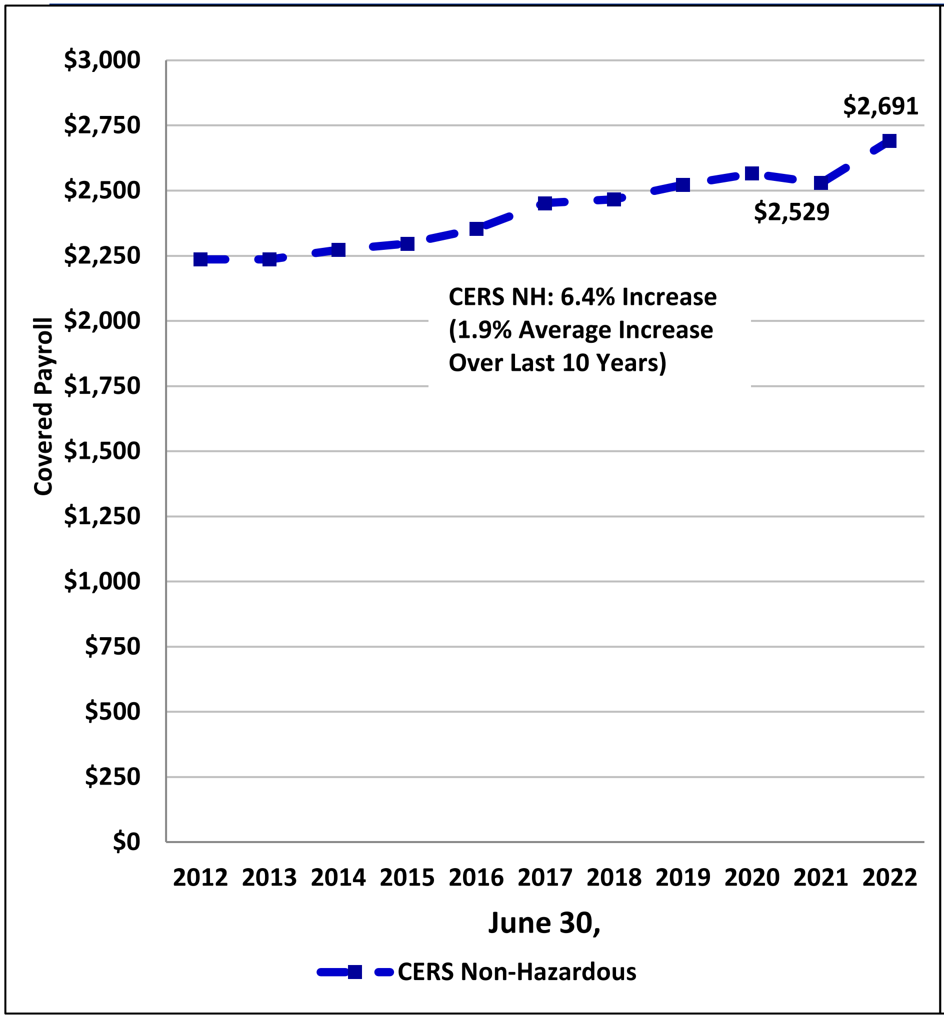
	CERS Non-Hazardous		CERS Hazardous	
	2021 Val	2022 Val	2021 Val	2022 Val
(1)	(2)	(3)	(4)	(5)
Pension Fund	$ 7.18	$ 7.53	$ 3.00	$ 3.07
Insurance Fund	0.50	(0.77)	0.28	(0.02)
Total Unfunded Actuarial Accrued Liability	**$ 7.68**	**$ 6.76**	**$ 3.28**	**$ 3.05**
Change in Unfunded Actuarial Accrued Liability		**$ (0.92)**		**$ (0.23)**

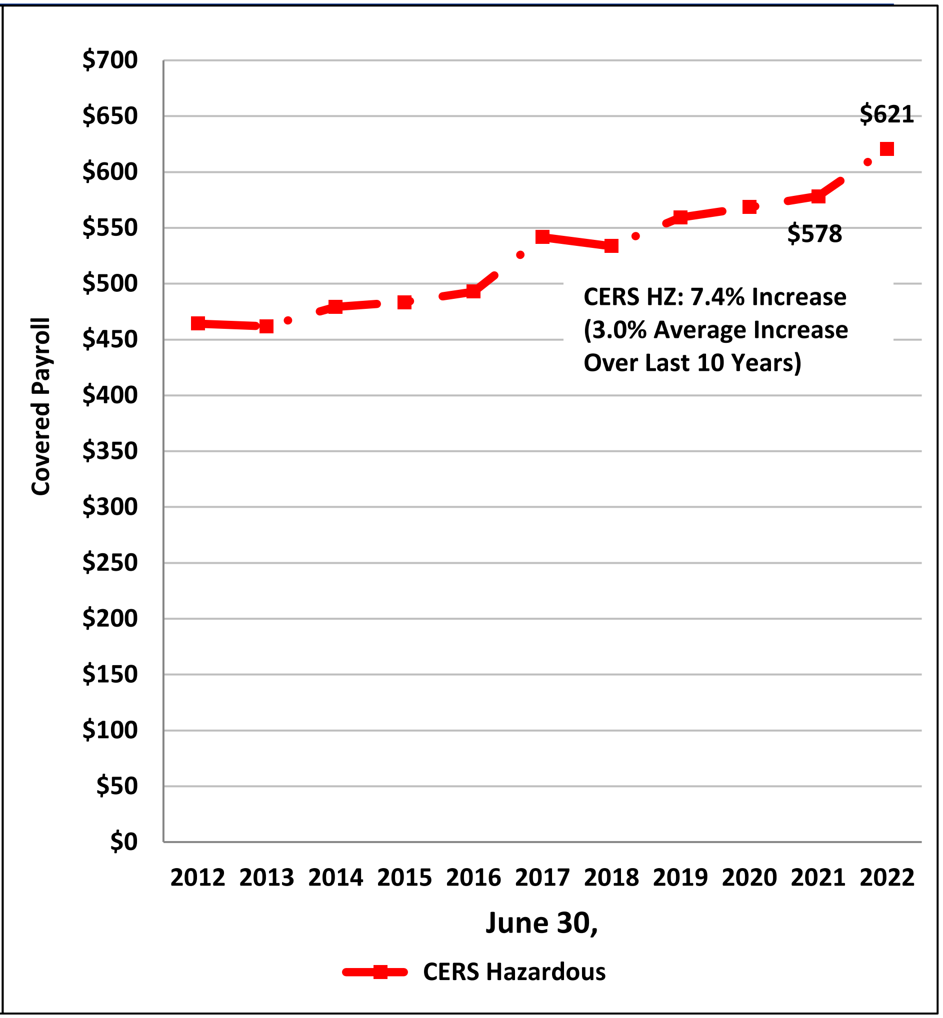
Active Membership Count



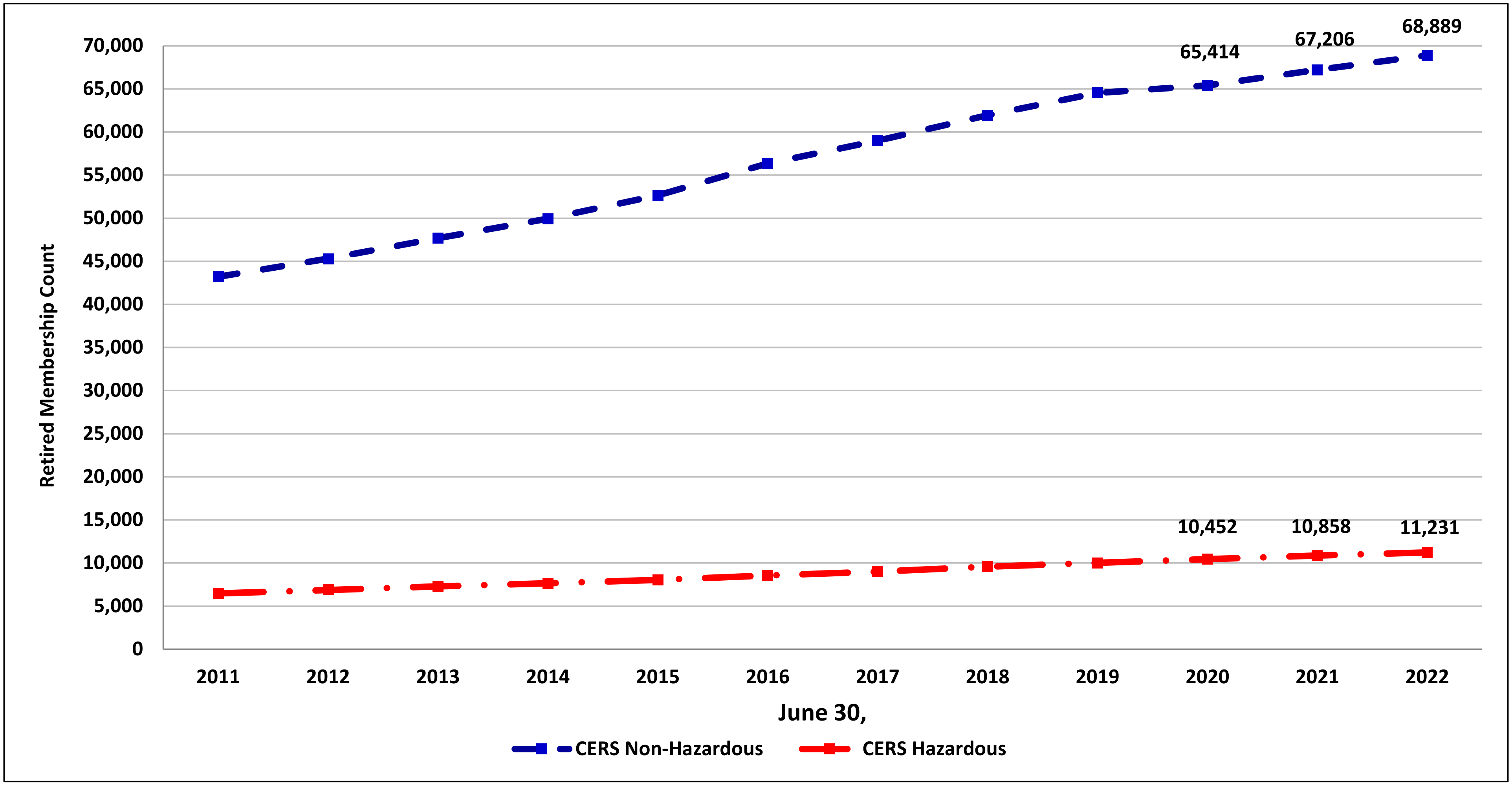


Covered Payroll ($ in Millions)





Retired Membership Count



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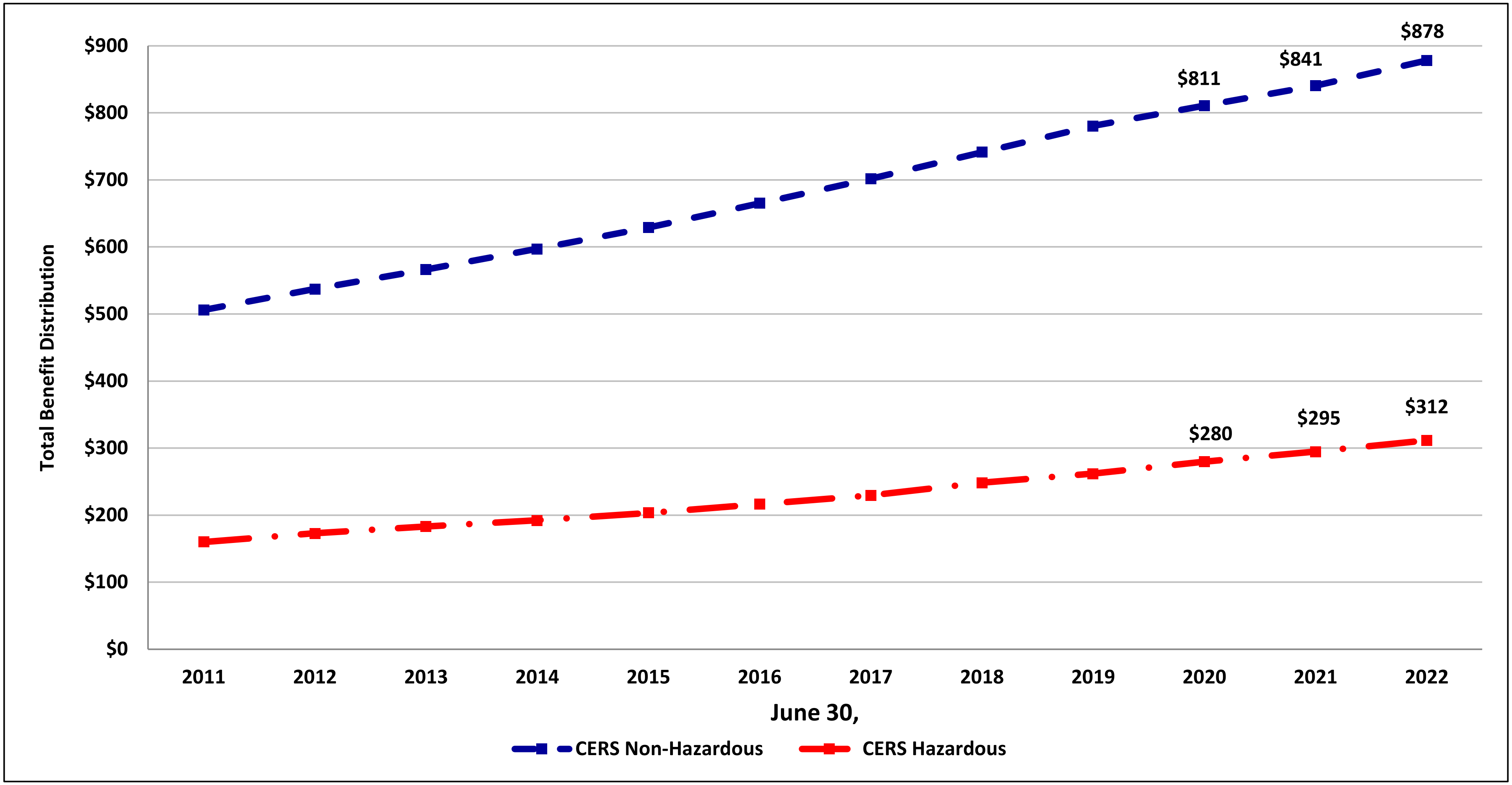
Pension Benefit Distributions ($ in Millions)



Funding Results – CERS ($ in millions)

	Non-Hazardous System				Hazardous System			
	Pension		Insurance		Pension		Insurance	
Item	2021	2022	2021	2022	2021	2022	2021	2022
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Total Normal Cost Rate	10.44%	10.22%	3.07%	2.69%	18.39%	18.02%	4.83%	4.50%
Member Rate	(5.00%)	(5.00%)	(0.55%)	(0.59%)	(8.00%)	(8.00%)	(0.55%)	(0.59%)
Employer Normal Cost Rate	5.44%	5.22%	2.52%	2.10%	10.39%	10.02%	4.28%	3.91%
Administrative Expenses	0.86%	0.84%	0.04%	0.04%	0.32%	0.32%	0.09%	0.08%
Amortization Cost	17.10%	17.28%	0.83%	-3.01%	32.10%	30.77%	2.41%	-1.41%
Total Actuarially Determined Rate	**23.40%**	**23.34%**	**3.39%**	**0.00%**	**42.81%**	**41.11%**	**6.78%**	**2.58%**
Actuarial Accrued Liability (AAL)	$14,895	$15,674	$3,450	$2,392	$5,629	$5,862	$1,751	$1,538
Actuarial Value of Assets	7,716	8,149	2,947	3,160	2,629	2,789	1,476	1,554
Unfunded AAL	**$7,179**	**$7,525**	**$503**	**($768)**	**$3,000**	**$3,073**	**$276**	**($16)**
Funded Ratio	**51.8%**	**52.0%**	**85.4%**	**132.1%**	**46.7%**	**47.6%**	**84.3%**	**101.0%**

PROJECTION INFORMATION PENSION AND INSURANCE

Projection Assumptions

- Assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%
- Full actuarially determined contribution paid each year
- Covered payroll assumed to increase by 2% each year
  - Total active population assumed to remain level

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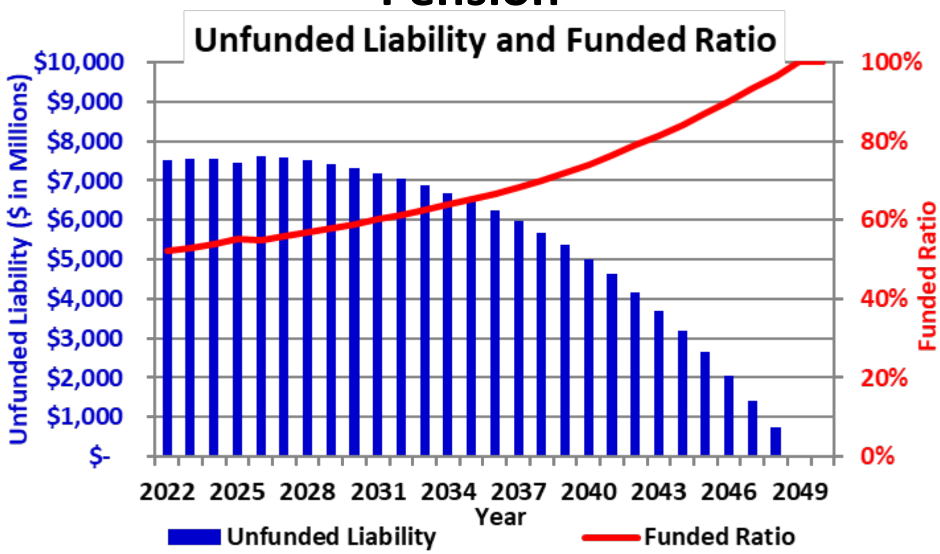
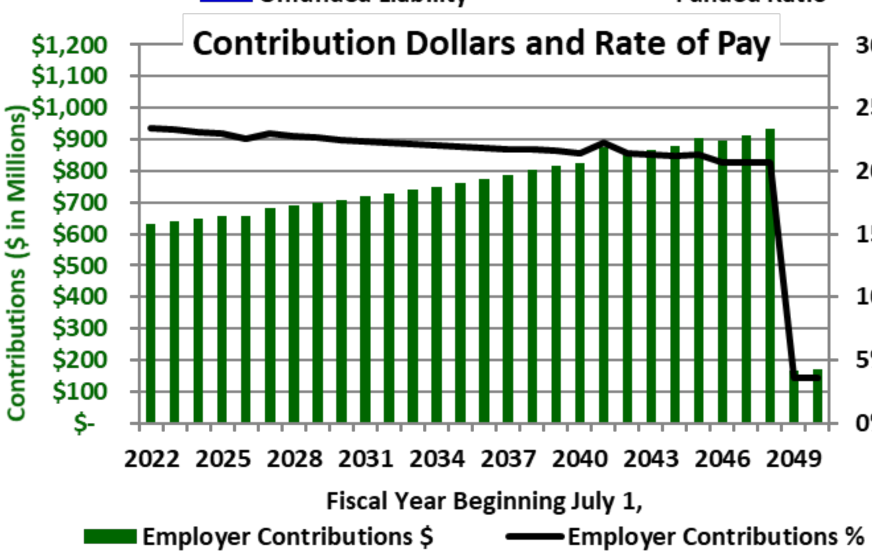
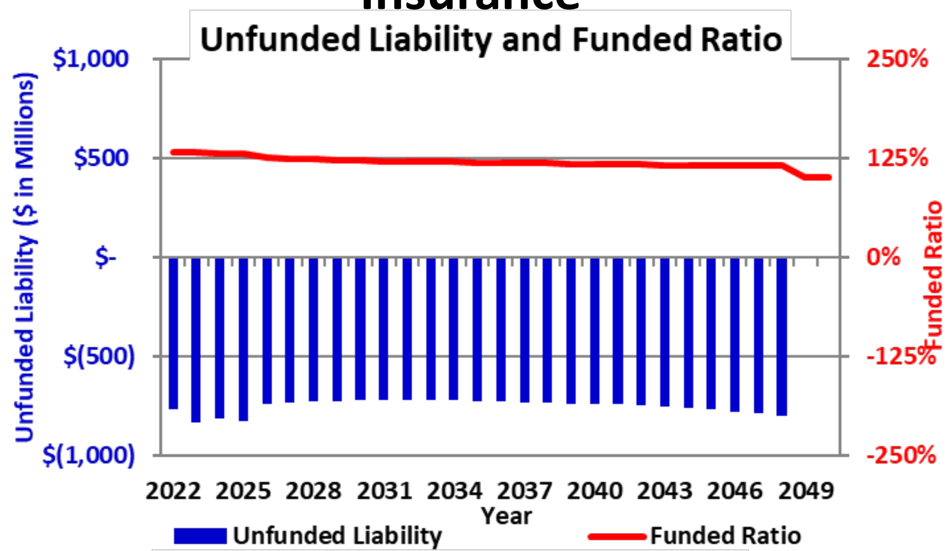
CERS Non-Hazardous Projection

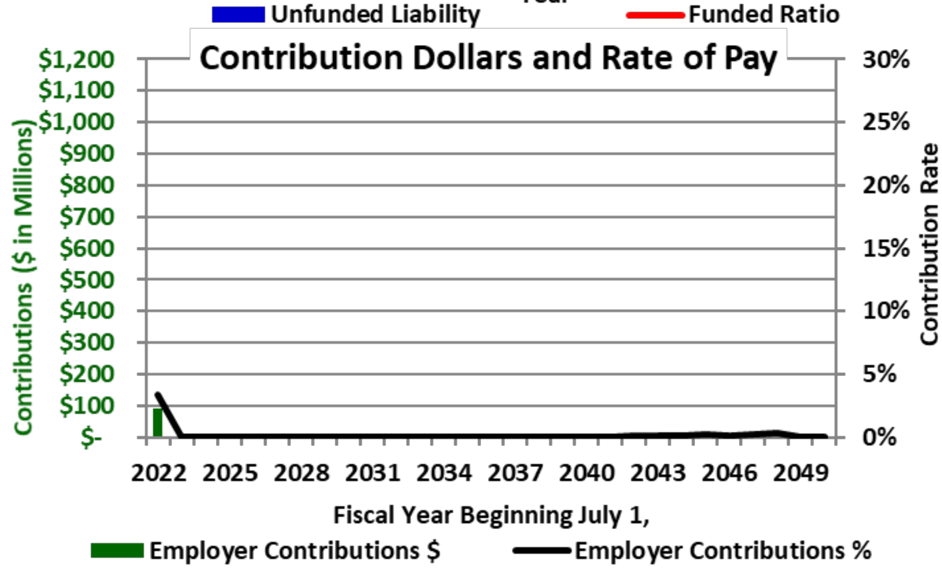
Pension





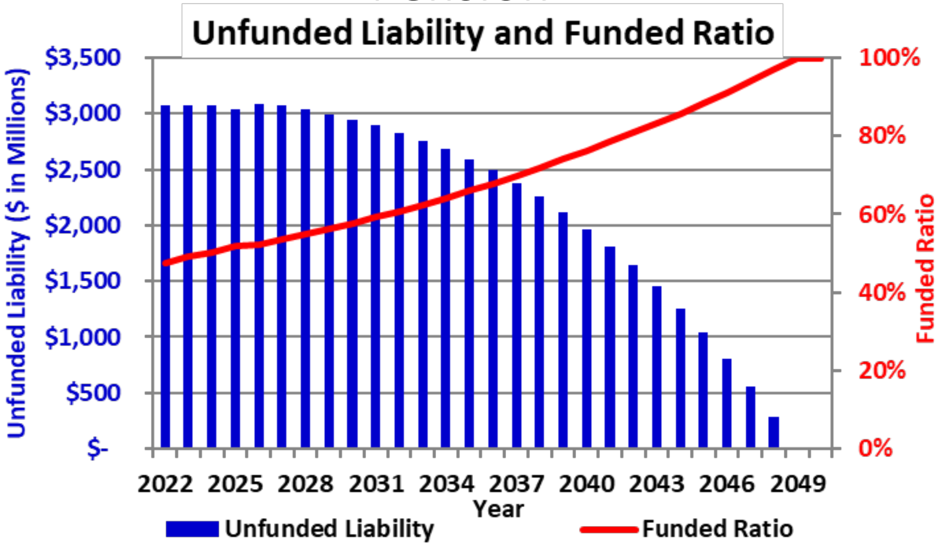
Insurance

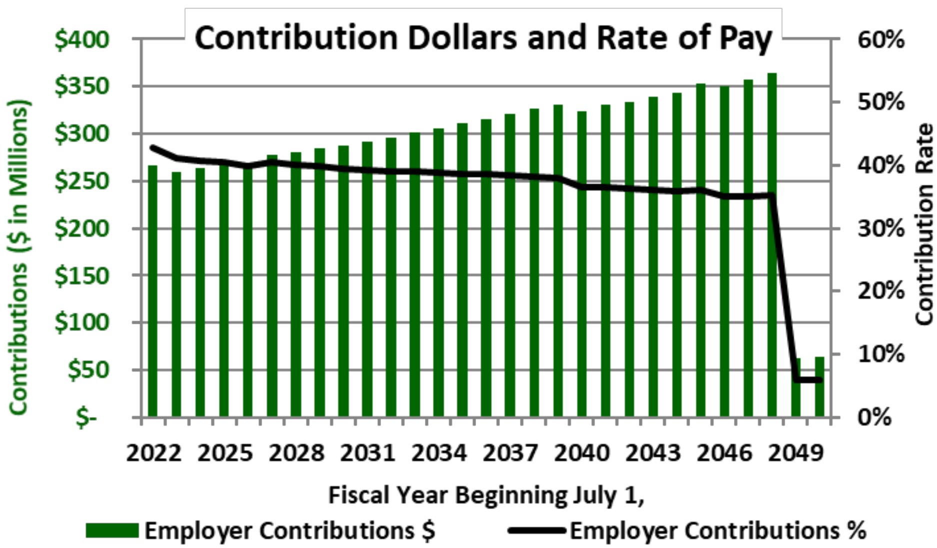




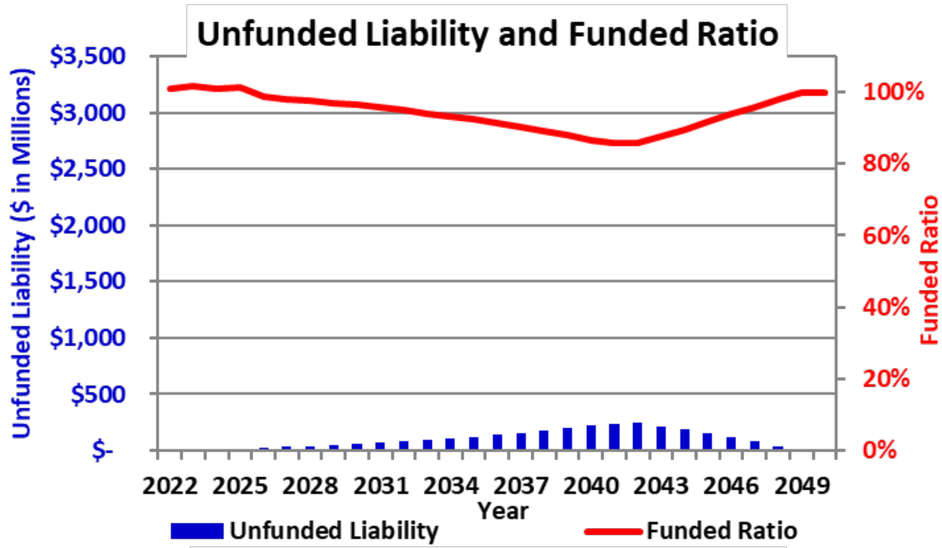
CERS Hazardous Projection

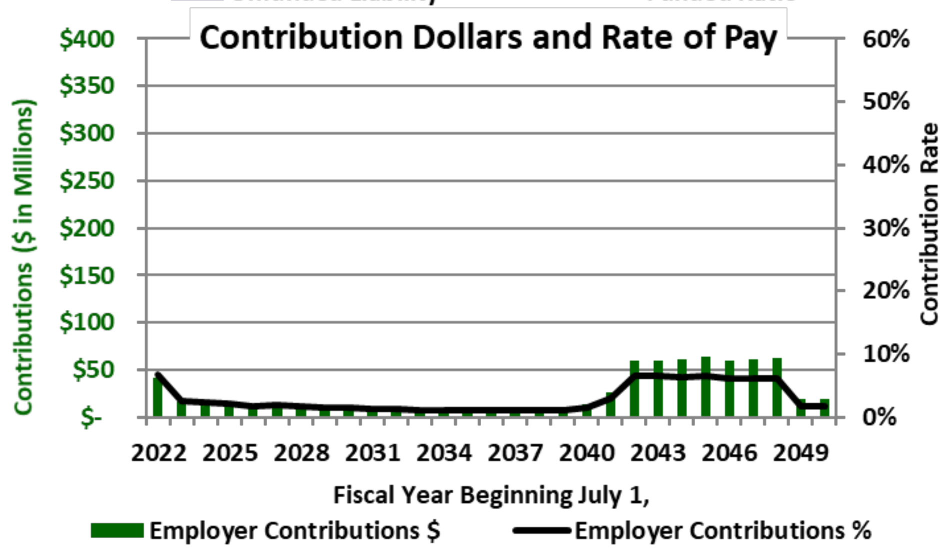
Pension





Insurance





Closing Comments on 2022 Valuation Results

- The decrease in the Medicare premiums from 2022 to 2023 significantly improved the funded status of the insurance funds and lowered the required contribution effort across all funds
- The FYE 2022 investment losses almost offset the FYE 2021 investment gains (compared to the investment return assumption)
- Actuarially determined contribution rates are fully phased in
- It is imperative the participating employers continue contributing the actuarially determined contributions in each future year to improve the System's financial security

Disclaimers

- This presentation is intended to be used in conjunction with the actuarial valuation as of June 30, 2022. This presentation should not be relied on for any purpose other than the purpose described in the valuation report.
- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- 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.

P: 469.524.0000 | www.grsconsulting.com

October 29, 2021

Board of Trustees
County Employees Retirement System
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Re: Additional Sensitivity Scenarios Based on Results of the June 30, 2021 Actuarial Valuation

Dear Members of the Board:

As requested, we are providing this additional information regarding the sensitivity of the valuation results for the **County Employees Retirement System (CERS)** to changes in the investment return assumption.

Background

The investment return assumption is used to discount future expected benefit payments to the valuation date in order to determine the liabilities of the plans. The lower the investment return assumption, the less the benefit payments are discounted and the higher the valuation liability. The current investment return assumption is 6.25% for the CERS non-hazardous and hazardous retirement and insurance funds. The sensitivity analysis shows the financial impact of a 0.25% increase, a 0.25% decrease, a 0.50% increase, and a 0.50% decrease in the investment return assumption. For purposes of this sensitivity analysis, the inflation assumption and payroll growth assumption remain unchanged from the valuation assumption.

Basis of Calculations

The information provided in this letter compliments the information provided in the June 30, 2021 actuarial valuation report. Please refer to the June 30, 2021 actuarial valuation report for additional discussion of the actuarial valuation, including the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. Additionally, please refer to the sensitivity analysis letter provided with the June 30, 2021 actuarial valuation report that provides additional sensitivity scenarios under additional economic assumptions. The scenarios provided in that letter are required per Kentucky State Statute 61.670

Board of Trustees
October 29, 2021
Page 2

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. The purpose of this information is to provide stakeholders the financial sensitivity of the unfunded liability and contribution rates to changes in the assumed rate of return.

The undersigned are independent actuaries and consultants. Both of the undersigned are Enrolled Actuaries, Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. Both of the undersigned are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel, Roeder, Smith & Company

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

Janie Shaw, ASA, EA, MAAA
Consultant

Sensitivity Analysis - Discount Rate ± 0.25%
Non-Hazardous Members
(Dollar amounts expressed in thousands)

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
(1)	(2)	(3)	(4)
Payroll Growth Rate	2.00%	2.00%	2.00%
Inflation Rate	2.30%	2.30%	2.30%
Discount Rate - Retirement	6.00%	6.25%	6.50%
Discount Rate - Insurance	6.00%	6.25%	6.50%
Retirement			
Actuarial Accrued Liability	$ 15,312,127	$ 14,894,906	$ 14,497,248
Actuarial Value of Assets	7,715,883	7,715,883	7,715,883
Unfunded Actuarial Accrued Liability	7,596,244	7,179,023	6,781,365
Funded Ratio	50.4%	51.8%	53.2%
Actuarially Determined Contribution Rate	24.77%	23.40%	22.07%
Insurance			
Actuarial Accrued Liability	$ 3,562,118	$ 3,450,484	$ 3,344,299
Actuarial Value of Assets	2,947,312	2,947,312	2,947,312
Unfunded Actuarial Accrued Liability	614,806	503,172	396,987
Funded Ratio	82.7%	85.4%	88.1%
Actuarially Determined Contribution Rate	3.92%	3.39%	2.87%
Combined			
Actuarial Accrued Liability	$ 18,874,245	$ 18,345,390	$ 17,841,547
Actuarial Value of Assets	10,663,195	10,663,195	10,663,195
Unfunded Actuarial Accrued Liability	8,211,050	7,682,195	7,178,352
Funded Ratio	56.5%	58.1%	59.8%
Actuarially Determined Contribution Rate	28.69%	26.79%	24.94%

Sensitivity Analysis - Discount Rate ± 0.50%
Non-Hazardous Members
(Dollar amounts expressed in thousands)

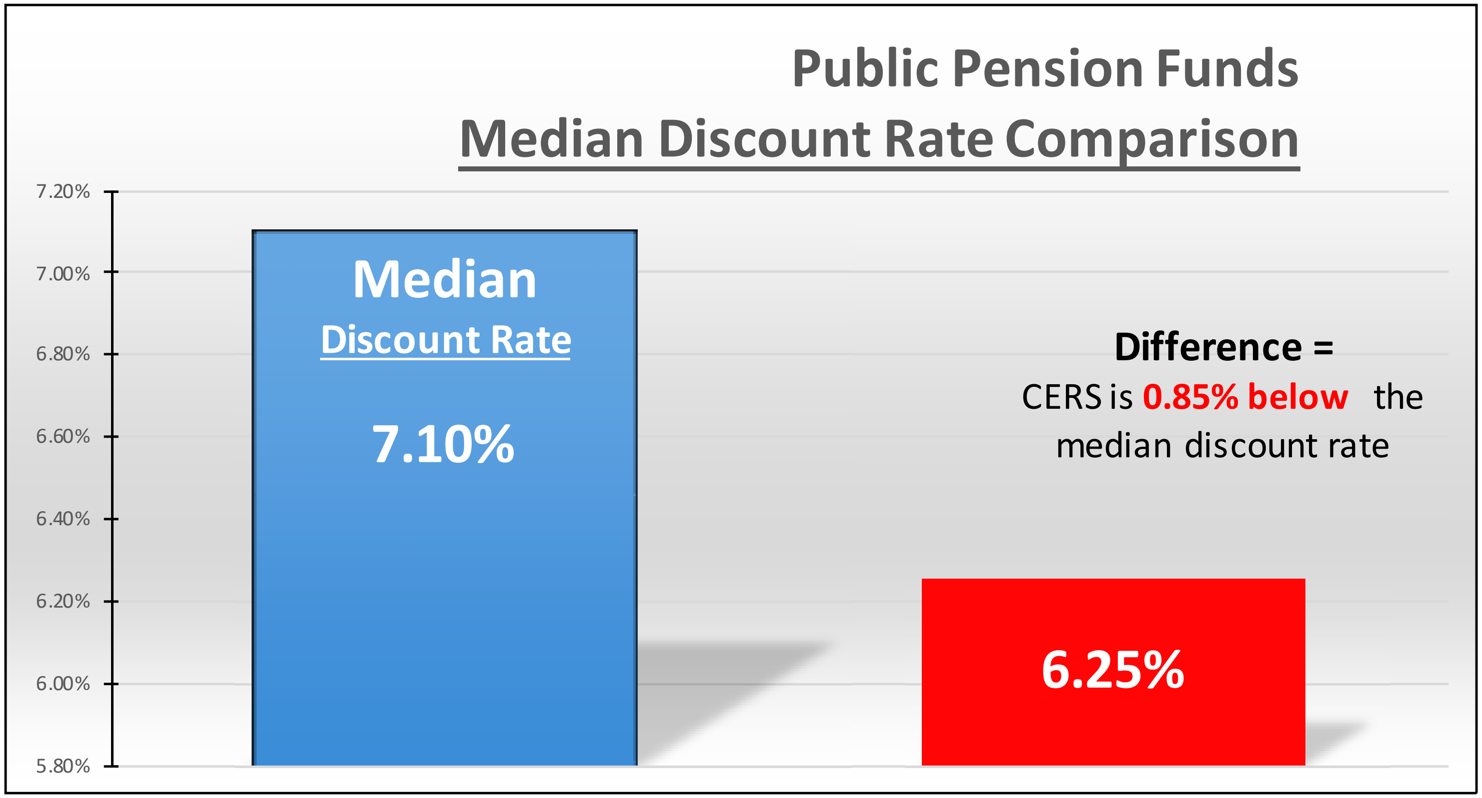
(1)	Decrease Discount Rate (2)	Valuation Results (3)	Increase Discount Rate (4)
Payroll Growth Rate	2.00%	2.00%	2.00%
Inflation Rate	2.30%	2.30%	2.30%
Discount Rate - Retirement	5.75%	6.25%	6.75%
Discount Rate - Insurance	5.75%	6.25%	6.75%
Retirement			
Actuarial Accrued Liability	$ 15,749,553	$ 14,894,906	$ 14,117,539
Actuarial Value of Assets	7,715,883	7,715,883	7,715,883
Unfunded Actuarial Accrued Liability	8,033,670	7,179,023	6,401,656
Funded Ratio	49.0%	51.8%	54.7%
Actuarially Determined Contribution Rate	26.23%	23.40%	20.80%
Insurance			
Actuarial Accrued Liability	$ 3,679,570	$ 3,450,484	$ 3,243,220
Actuarial Value of Assets	2,947,312	2,947,312	2,947,312
Unfunded Actuarial Accrued Liability	732,258	503,172	295,908
Funded Ratio	80.1%	85.4%	90.9%
Actuarially Determined Contribution Rate	4.47%	3.39%	2.38%
Combined			
Actuarial Accrued Liability	$ 19,429,123	$ 18,345,390	$ 17,360,759
Actuarial Value of Assets	10,663,195	10,663,195	10,663,195
Unfunded Actuarial Accrued Liability	8,765,928	7,682,195	6,697,564
Funded Ratio	54.9%	58.1%	61.4%
Actuarially Determined Contribution Rate	30.70%	26.79%	23.18%

Sensitivity Analysis - Discount Rate ± 0.25%
Hazardous Members
(Dollar amounts expressed in thousands)

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
(1)	(2)	(3)	(4)
Payroll Growth Rate	2.00%	2.00%	2.00%
Inflation Rate	2.30%	2.30%	2.30%
Discount Rate - Retirement	6.00%	6.25%	6.50%
Discount Rate - Insurance	6.00%	6.25%	6.50%
Retirement			
Actuarial Accrued Liability	$ 5,799,604	$ 5,629,458	$ 5,467,573
Actuarial Value of Assets	2,628,621	2,628,621	2,628,621
Unfunded Actuarial Accrued Liability	3,170,983	3,000,837	2,838,952
Funded Ratio	45.3%	46.7%	48.1%
Actuarially Determined Contribution Rate	45.25%	42.81%	40.46%
Insurance			
Actuarial Accrued Liability	$ 1,805,341	$ 1,751,203	$ 1,699,848
Actuarial Value of Assets	1,475,635	1,475,635	1,475,635
Unfunded Actuarial Accrued Liability	329,706	275,568	224,213
Funded Ratio	81.7%	84.3%	86.8%
Actuarially Determined Contribution Rate	7.77%	6.78%	5.81%
Combined			
Actuarial Accrued Liability	$ 7,604,945	$ 7,380,661	$ 7,167,421
Actuarial Value of Assets	4,104,256	4,104,256	4,104,256
Unfunded Actuarial Accrued Liability	3,500,689	3,276,405	3,063,165
Funded Ratio	54.0%	55.6%	57.3%
Actuarially Determined Contribution Rate	53.02%	49.59%	46.27%

Sensitivity Analysis - Discount Rate ± 0.50%
Hazardous Members
(Dollar amounts expressed in thousands)

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
(1)	(2)	(3)	(4)
Payroll Growth Rate	2.00%	2.00%	2.00%
Inflation Rate	2.30%	2.30%	2.30%
Discount Rate - Retirement	5.75%	6.25%	6.75%
Discount Rate - Insurance	5.75%	6.25%	6.75%
Retirement			
Actuarial Accrued Liability	$ 5,978,810	$ 5,629,458	$ 5,313,349
Actuarial Value of Assets	2,628,621	2,628,621	2,628,621
Unfunded Actuarial Accrued Liability	3,350,189	3,000,837	2,684,728
Funded Ratio	44.0%	46.7%	49.5%
Actuarially Determined Contribution Rate	47.81%	42.81%	38.21%
Insurance			
Actuarial Accrued Liability	$ 1,862,454	$ 1,751,203	$ 1,651,082
Actuarial Value of Assets	1,475,635	1,475,635	1,475,635
Unfunded Actuarial Accrued Liability	386,819	275,568	175,447
Funded Ratio	79.2%	84.3%	89.4%
Actuarially Determined Contribution Rate	8.80%	6.78%	4.88%
Combined			
Actuarial Accrued Liability	$ 7,841,264	$ 7,380,661	$ 6,964,431
Actuarial Value of Assets	4,104,256	4,104,256	4,104,256
Unfunded Actuarial Accrued Liability	3,737,008	3,276,405	2,860,175
Funded Ratio	52.3%	55.6%	58.9%
Actuarially Determined Contribution Rate	56.61%	49.59%	43.09%


Public Pension Funds
Median Discount Rate Comparison
7.20%
7.00%
6.80%
6.60%
6.40%
6.20%
6.00%
5.80%
Median
Discount Rate
7.10%
Difference =
CERS is 0.85% below the
median discount rate
6.25%

M E M O R A N D U M

DATE: **March 8, 2022**

TO: **Mike Foster, Chair**
CERS Actuarial Committee

FROM: **Betty Pendergrass, Chair, CERS Board of Trustees**

RE: **Historical Summary of Investment Earnings & Actuarial Discount Rate**

Each year, the CERS Board of Trustees will evaluate key economic assumptions for the upcoming annual actuarial valuation. GRS has provided an excellent summary of the assumptions that can be evaluated between experience studies that provide a more detailed look at changes in a plan's demographic information.

The actuarial discount rate is the rate we expect to achieve on the underlying investment portfolio over the next 30 – 40 years. This rate includes a "real return" plus anticipated inflation for investment returns. Recently, Trustees were advised that using a 10-year yield was more relevant than a longer term, such as 20 – 30 years. Fortunately, the "since inception yield" that has been tracked since 1984 for the CERS plans offers an historical view of the long-term actual earnings. While historical yields do not guarantee future earnings, an historical analysis can outline the trends in 10-yr, actuarial rates, and "since inception" earnings. This analysis can also help frame the potential variances in earnings and the range for potential gains/losses between actual earnings and the actuarial assumption.

Earnings in the attached summary were reported in either the Annual Comprehensive Financial Report (2012 & 2013) or the Summary Annual Financial Report (2014 – 2021). The actuarial discount rate was also reported in the Annual Comprehensive Financial Report. In addition, for 2012 & 2013, earnings for CERS nonhazardous and CERS hazardous were not separately reported, so the performance reflects the total investment earnings of Kentucky Retirement System.

County Employees Retirement System
1270 Louisville Road
Frankfort, KY 40601

CERS PENSION & OPEB EARNINGS ANALYSIS
FY2012 - FY2021

NONHAZARDOUS PENSION

Fiscal Year Ended June 30	10-year returns	Actuarial Discount Rate	Since Inception Returns
2012 *	5.99%	7.75%	9.36%
2013 *	6.60%	7.75%	9.40%
2014	6.84%	7.75%	9.62%
2015	6.04%	7.50%	9.34%
2016	5.01%	7.50%	9.02%
2017	4.88%	6.25%	9.16%
2018	6.22%	6.25%	9.15%
2019	8.86%	6.25%	9.05%
2020	7.37%	6.25%	8.82%
2021	8.00%	6.25%	9.20%

* Returns for CERS Haz and CERS NHaz were not reported separately.

NONHAZARDOUS INSURANCE

Fiscal Year Ended June 30	10-year returns	Actuarial Discount Rate	Since Inception Returns
2012 *	5.86%	7.75%	7.53%
2013 *	6.18%	7.75%	7.42%
2014	6.33%	7.75%	7.89%
2015	5.54%	7.50%	7.48%
2016	4.31%	7.50%	7.22%
2017	3.81%	6.25%	7.42%
2018	5.59%	6.25%	7.48%
2019	9.01%	6.25%	7.43%
2020	7.50%	6.25%	7.21%
2021	7.60%	6.25%	7.70%

* Returns for CERS Haz and CERS NHaz were not reported separately.

HAZARDOUS PENSION

Fiscal Year Ended June 30	10-year returns	Actuarial Discount Rate	Since Inception Returns
2012 *	5.99%	7.75%	9.36%
2013 *	6.60%	7.75%	9.40%
2014	6.83%	7.75%	9.61%
2015	6.04%	7.50%	9.34%
2016	5.03%	7.50%	9.03%
2017	4.89%	6.25%	9.17%
2018	6.23%	6.25%	9.15%
2019	8.87%	6.25%	9.06%
2020	7.36%	6.25%	8.82%
2021	8.00%	6.25%	9.20%

* Returns for CERS Haz and CERS NHaz were not reported separately.

HAZARDOUS INSURANCE

Fiscal Year Ended June 30	10-year returns	Actuarial Discount Rate	Since Inception Returns
2012 *	5.86%	7.75%	7.53%
2013 *	6.18%	7.75%	7.42%
2014	6.33%	7.75%	7.89%
2015	5.54%	7.50%	7.48%
2016	4.32%	7.50%	7.22%
2017	3.82%	6.25%	7.43%
2018	5.61%	6.25%	7.49%
2019	9.05%	6.25%	7.44%
2020	7.52%	6.25%	7.21%
2021	7.70%	6.25%	7.70%

* Returns for CERS Haz and CERS NHaz were not reported separately.

C:\01BapDoc\CERS Board of Trustees\Actuarial\10YRvsInceptionVsDiscount2012-2021.xlsx

BAP Prepared 03/08/2022

P: 469.524.0000 | www.grsconsulting.com

March 7, 2022

Board of Trustees
County Employees Retirement System
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Re: Economic Assumptions for Use in the Upcoming June 30, 2022 Actuarial Valuation

Dear Trustees of the Board:

Each year the actuarial committee reviews the principal economic assumptions (i.e. price inflation, investment return assumption, and payroll growth) for use in the actuarial valuation. Economic and demographic assumptions used in an actuarial valuation should be representative of the System's expected long-term experience. These assumptions are not intended to consistently model short-term (e.g. the next two to five years) experience, but are supposed to be representative of expected long-term trends. As a result, short-term experience may differ significantly from the long-term assumption used in an actuarial valuation.

The three primary economic assumptions used in an actuarial valuation include the price inflation, investment return, and payroll growth assumption. The following letter and exhibits provide our recommended assumptions to be adopted by the Board for use in the June 30, 2022 actuarial valuation and rationale for each recommendation.

Assumption	June 30, 2021 Valuation Adopted Assumption	June 30, 2022 Valuation Recommended Assumption
Prince Inflation	2.30%	2.30%
Investment Return	6.25%	6.25%
Payroll Growth	2.00%	2.00%

Price Inflation Assumption

Benefits provided to members in CERS are not explicitly impacted by the actual change in price inflation. The current price inflation assumption is 2.30%. We reviewed several sources that provide various perspectives of forward-looking inflation expectations and recommend the continued use of a 2.30% inflation assumption in the 2022 actuarial valuation.

We recognized that actual inflation as measured by CPI has been much higher than the current 2.30% assumption during the last 12 months. Additionally, many professional forecasters and economists expect that inflation will continue to be elevated above historical levels for the next two to three years. However, but given the long-time horizon of an actuarial valuation, and the relative immateriality of this assumption in the actuarial valuation, we believe a 2.30% inflation assumption continues to be reasonable for this purpose. Please see Exhibit 1 for more information on the comparison of future inflation expectations.

Investment Return Assumption

The investment return assumption is perhaps the most important and most subjective assumption used in an actuarial valuation. It represents the expected long-term return on plan assets and is used to discount future expected benefit payments to the valuation date in order to determine the liabilities of the plan.

We believe the most appropriate approach in identifying a reasonable investment return assumption is to understand forward-looking expectations developed by professional investment consulting firms. To do this, we have analyzed CERS's investment policy with the capital market assumptions from five nationally recognized investment consultants, including Wilshire Advisors which is CERS's investment consultant. Some of these assumptions are based on a seven- to ten-year time horizon, while others are based on a longer 20- to 30-year time horizon. Since investment consultants update their assumptions on at least an annual basis, we also compared their expectations developed in 2022, to their prior year assumptions to better understand changes in their expectations. Attached is Exhibit 2 that provides this comparison for each investment consulting firm for 2021 and 2022.

It is our recommendation that the CERS Board adopt the continued use of a 6.25% investment return assumption for the valuation of the pension and insurance funds at June 30, 2022. Given the methodology used by the investment consultants to develop their expectations, it is possible their expectations for the shorter term revert higher as the economy enters an expected increasing interest rate setting.

Payroll Growth Assumption

The payroll growth assumption is only used in development of the amortization cost component of the contribution rate. When emerging covered payroll changes are consistent with the payroll growth assumption, the amortization cost will remain relatively constant as a percentage of payroll (assuming there are no other gains or losses). However, if the future change in covered payroll is consistently less than assumed, then the amortization cost will gradually increase as a percentage of covered payroll.

The current payroll growth assumption is 2.00% of pay for the Non-Hazardous and Hazardous funds (pension and insurance). Based on the ten-year historical experience of the change in membership and covered payroll that is shown in Exhibit 3, we believe that 2.00% payroll growth remains within

CERS Board of Trustees
March 7, 2022
Page 3

a reasonable range of appropriate assumptions and recommend the Board adopt a 2.00% payroll growth assumption for use in the June 30, 2021 actuarial valuation.

Closing Comments

This analysis was conducted in accordance with generally accepted actuarial principles and practices. We believe these recommended assumptions comply with Actuarial Standard of Practice No. 27, Selection of Economic Assumptions for Measuring Pension Obligations.

Both of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. In addition, all of the undersigned are experienced in performing valuations for large public retirement systems.

Sincerely,

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

Janie Shaw, ASA, MAAA, EA
Consultant

Enclosure

Exhibit 1.
Comparison of Price Inflation Assumption to Sources of Forward-Looking Expectations

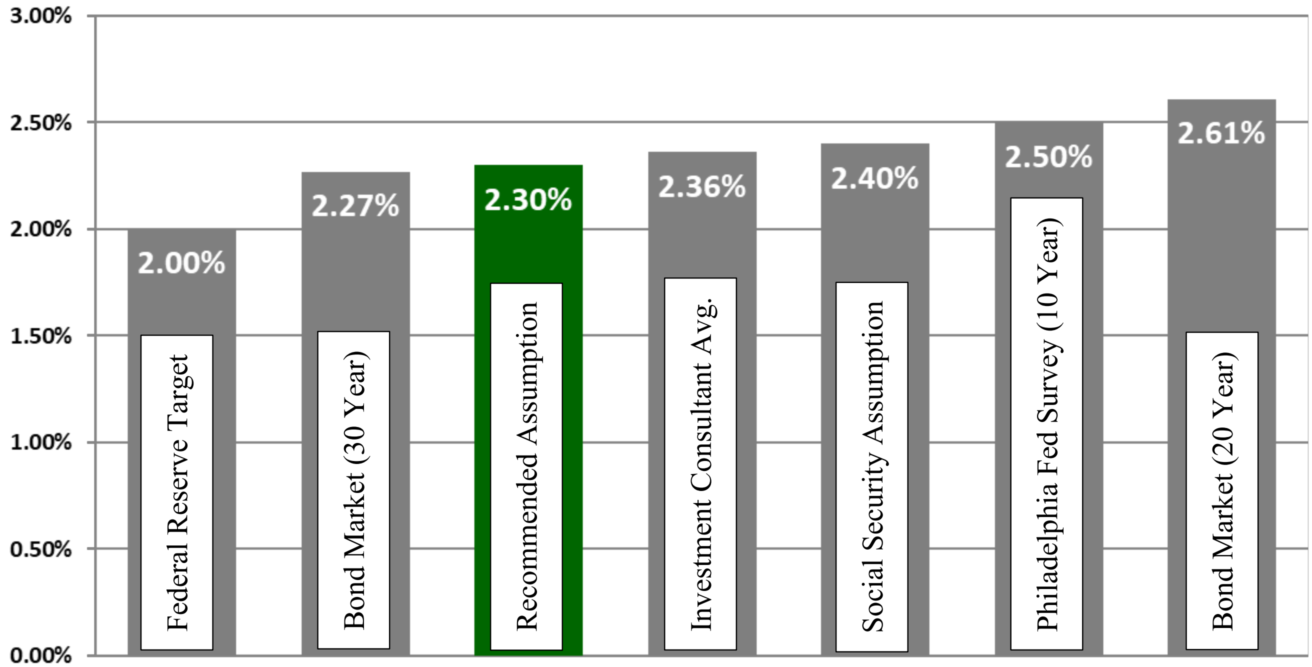


Exhibit 2.
Review of Forward-Looking Capital Market Expectations Mapped CERS's Investment Policy

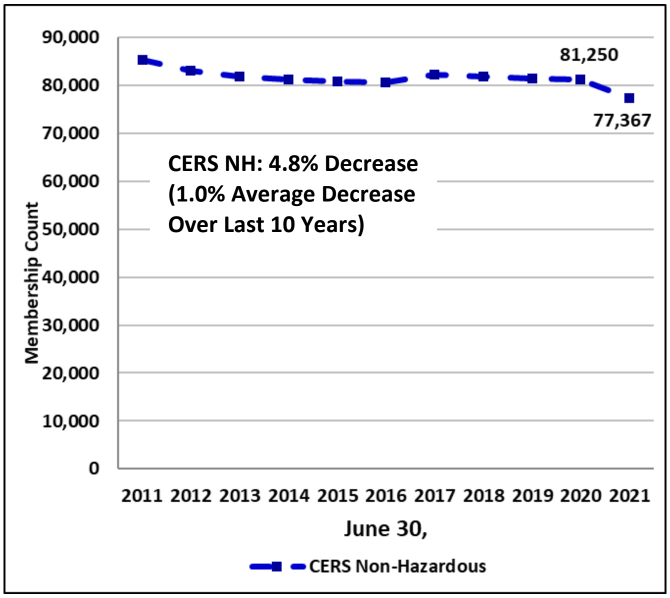
	Investment Consultant	50th Percentiale Expected Return (Geometric) 2022	50th Percentiale Expected Return (Geometric) 2021	Probability of Exeeding 6.25% 2022	Probability of Exeeding 6.25% 2021
	(1)	(2)	(3)	(4)	(5)
7 to 10 Year Expectations	1	4.8%	5.3%	28%	35%
	2	4.9%	5.1%	33%	35%
	3	5.2%	5.3%	35%	37%
	4	5.3%	5.3%	35%	35%
	5	5.4%	5.3%	38%	36%
20 to 30 Year Expectations	1	6.2%	6.2%	50%	49%
	2	6.5%	6.4%	53%	52%
7-10 Year Expectation Avg:		5.1%	5.3%	34%	36%
20-30 Year Expectation Avg:		6.4%	6.3%	52%	51%

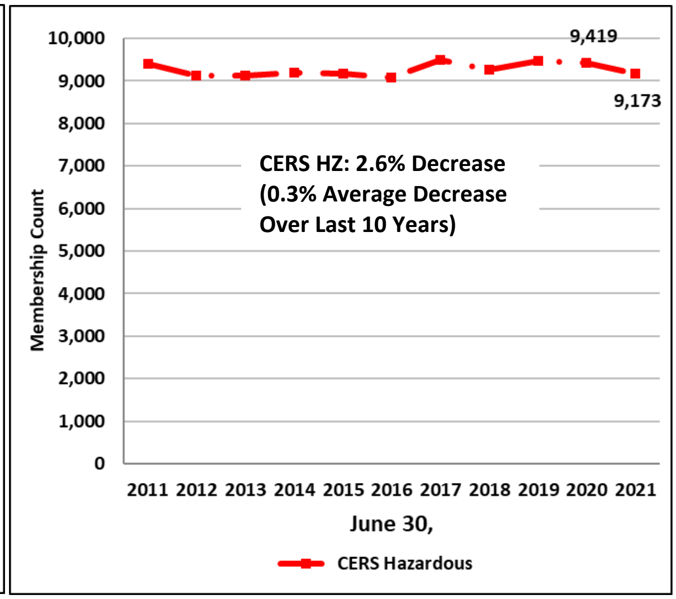
The primary purpose of performing this analysis using multiple investment consulting firms is to quantify the possible difference in forward looking return expectations within the professional investment community. Additionally, we have provided this analysis based on information from the following investment consulting firms:

- BNY Mellon
- J.P. Morgan
- Mercer
- NEPC
- Wilshire Associates

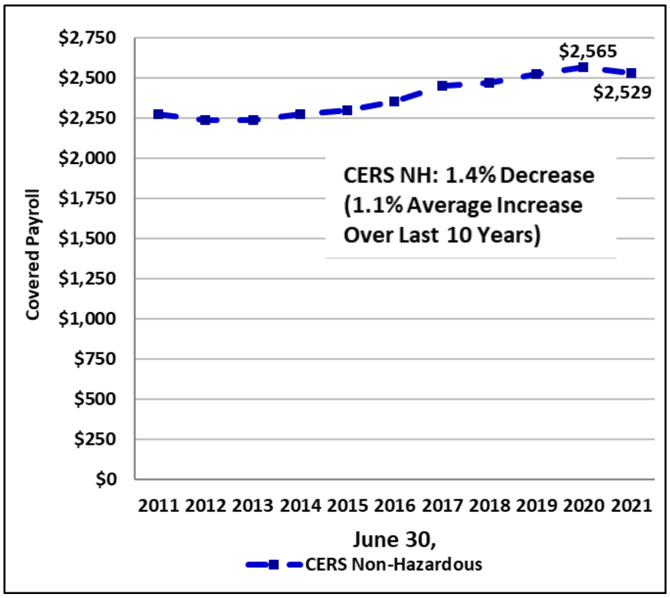
Exhibit 3.
Review of Historical
Change in Membership and Covered Payroll

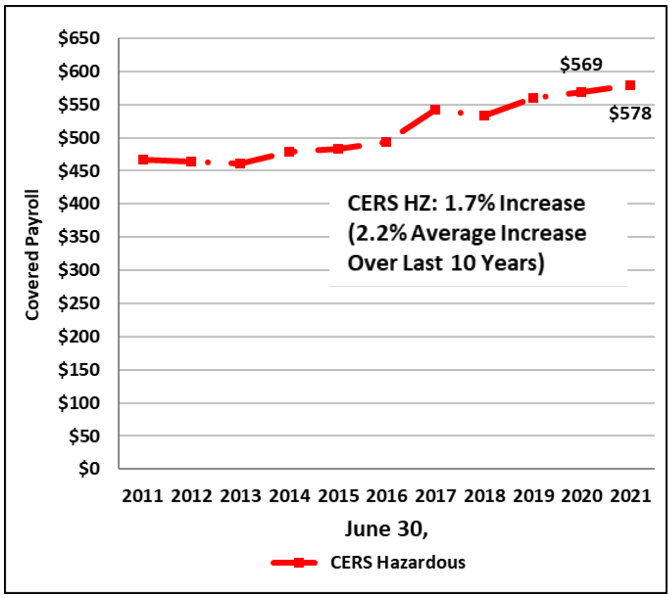
Change in Active Membership





Change in Covered Payroll





Wilshire

Capital Market Return Assumptions Update

September 30, 2022

Wilshire

Summary Changes for 3Q 2022

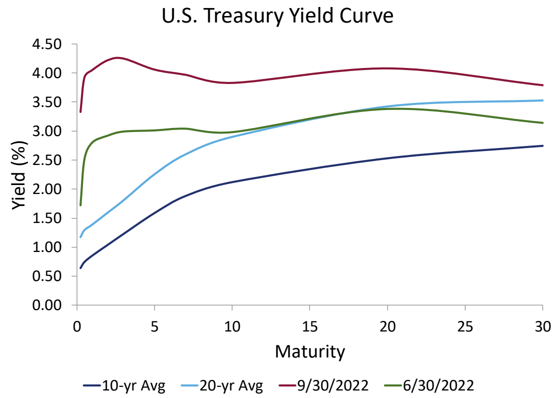
- Capital market return assumptions are updated on a quarterly basis for new asset allocation studies - the full assumption methodology is available in Wilshire's annual paper
- Yield curve up across all maturities although relatively flat with some modest inversions
  - Curve movements resulted in an increased assumption for all fixed income segments
  - Credit spreads widened slightly for investment grade but tightened for high yield bonds
- Yields on public real asset securities are generally up; breakeven inflation is down
- Equity assumptions are up on higher current income and much lower current valuations
- Equity risk premium is down as the fixed income assumption is up 85 basis points

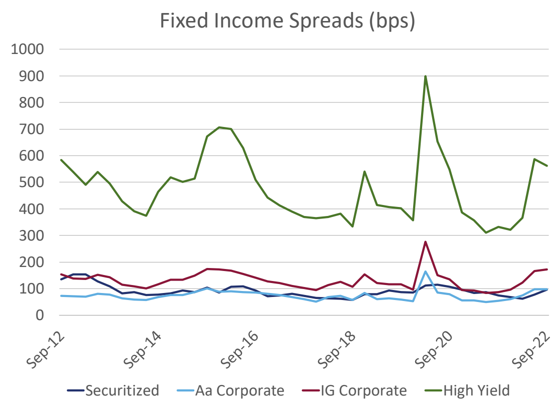
Asset Class Assumption	Total Return (%) Jun 2022	Change	Sep 2022	Risk (%)
Inflation	2.35	-0.10	2.25	1.75
Cash Equivalents	3.15	0.50	3.65	0.75
Treasuries	3.30	0.90	4.20	4.50
Core Bonds	4.05	0.85	4.90	4.25
LT Core Bonds	4.30	0.80	5.10	10.00
High Yield Bonds	6.25	0.60	6.85	8.90
Global RE Securities	5.35	0.45	5.80	16.45
Private Real Estate	6.50	-0.15	6.35	14.00
U.S. Stocks	6.00	0.75	6.75	17.00
Dev. ex-U.S. Stocks	7.00	0.50	7.50	18.00
Emerging Market Stocks	7.00	0.75	7.75	26.00
Private Equity	10.05	0.20	10.25	28.00
Global 60/40 (ACWI/U.S. Core)	5.90	0.75	6.65	10.75

Implied Risk Premia	Relative Return (%) Jun 2022	Change	Sep 2022
Cash - Inflation	0.80	0.60	1.40
Treasury - Cash	0.15	0.40	0.55
Core - Treasury	0.75	-0.05	0.70
Long-Term Core - Core	0.25	-0.05	0.20
High Yield - Core	2.20	-0.25	1.95
Global RESI - Core	1.30	-0.40	0.90
U.S. Stocks - Core	1.95	-0.10	1.85
Private Equity - U.S. Stocks	4.05	-0.55	3.50
Implied Real Return (ACA - CPI)			
U.S. Stocks	3.65	0.85	4.50
U.S. Bonds	1.70	0.95	2.65
Cash Equivalents	0.80	0.60	1.40

Wilshire

Fixed Income



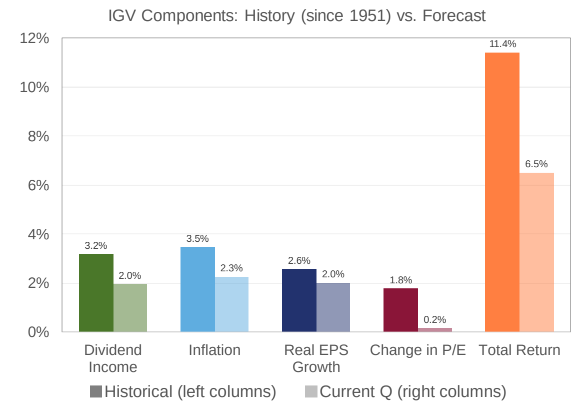


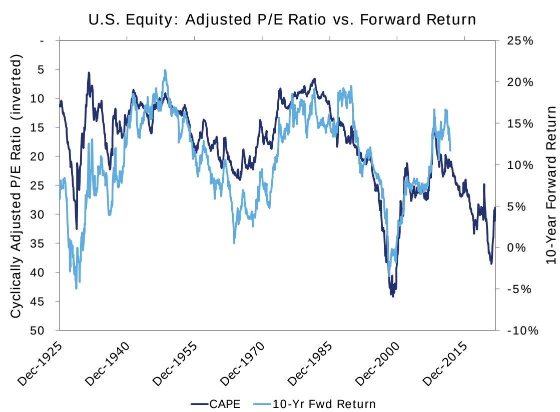
Inflation & Fixed Income		Jun 2022	Change	Sep 2022
Inflation	10-Year Treasury Yield	3.02	0.81	3.83
	10-Year Real Yield	0.67	1.01	1.68
	Breakeven Inflation	2.35	(0.19)	2.15
	Inflation Forecast	**2.35**	**(0.10)**	**2.25**
Cash	91-Day T-Bill Yield	1.72	1.61	3.33
	T-Bill Yield in 10 Yrs	3.25	0.40	3.65
	Cash Forecast	**3.15**	**0.50**	**3.65**
Treasury	U.S. Treasury Idx Yield	3.09	1.04	4.13
	Treasury Idx Yield in 10 Yrs	3.85	0.45	4.30
	Treasury Idx Forecast	**3.30**	**0.90**	**4.20**
	U.S. LT Treasury Idx Yield	3.33	0.67	4.00
	LT Treasury Idx Yield in 10 Yrs	3.25	0.63	3.88
	LT Treasury Idx Forecast	**3.35**	**0.70**	**4.05**
Spread	U.S. Corporate Idx OAS	1.66	0.06	1.72
	Corporate Idx OAS in 10 Yrs	1.56	(0.01)	1.55
	Corporate Idx Forecast	**4.75**	**0.90**	**5.65**
	U.S. Core Bond Forecast	**4.05**	**0.85**	**4.90**
	U.S. LT Core Bond Forecast	**4.30**	**0.80**	**5.10**
	U.S. High Yield Idx OAS	5.87	(0.25)	5.62
	High Yield Idx OAS in 10 Yrs	5.53	(0.06)	5.46
	High Yield Bond Forecast	**6.25**	**0.60**	**6.85**

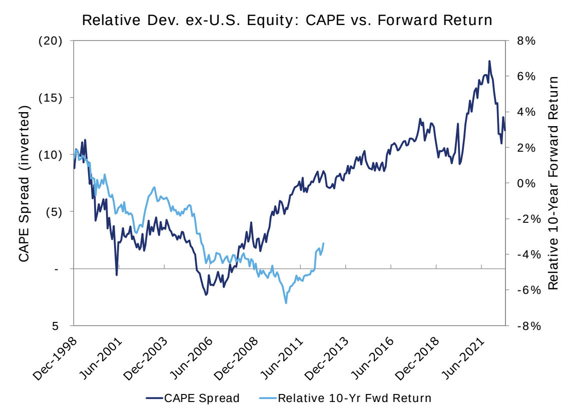
Wilshire

Equity Markets

Equity: Public & Private		Jun 2022	Change	Sep 2022
Equity	DDM	7.20	0.05	7.25
	IGV	5.70	0.80	6.50
	CAPE	6.10	0.60	6.70
	U.S. Equity Forecast	**6.00**	**0.75**	**6.75**
	Dev-ex-US Equity Forecast	**7.00**	**0.50**	**7.50**
	EM Equity Forecast	**7.00**	**0.75**	**7.75**
Private	Cost of Debt (Public)	5.05	0.60	5.65
	Cost of Debt (Private)	7.10	0.50	7.60
	Private Market Basket Forecast	**10.05**	**0.20**	**10.25**



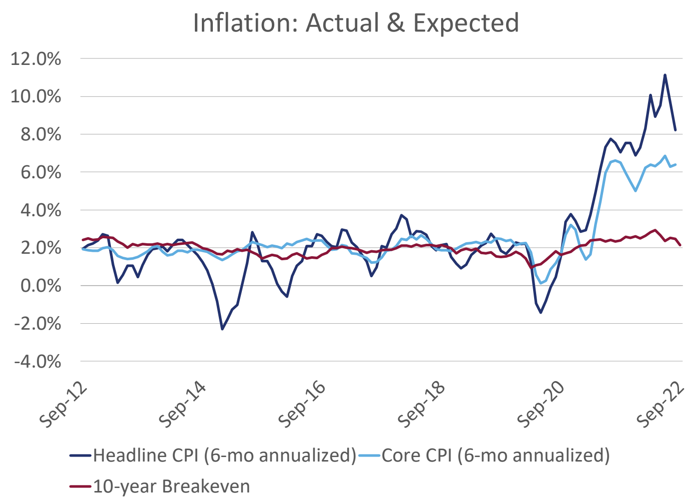




Wilshire

Real Assets

- Inflation assumption of 2.25% is just above breakeven given the volatility in the signal before and after quarter-end
- Real asset yields are generally higher
- Commodity assumption is up on higher cash



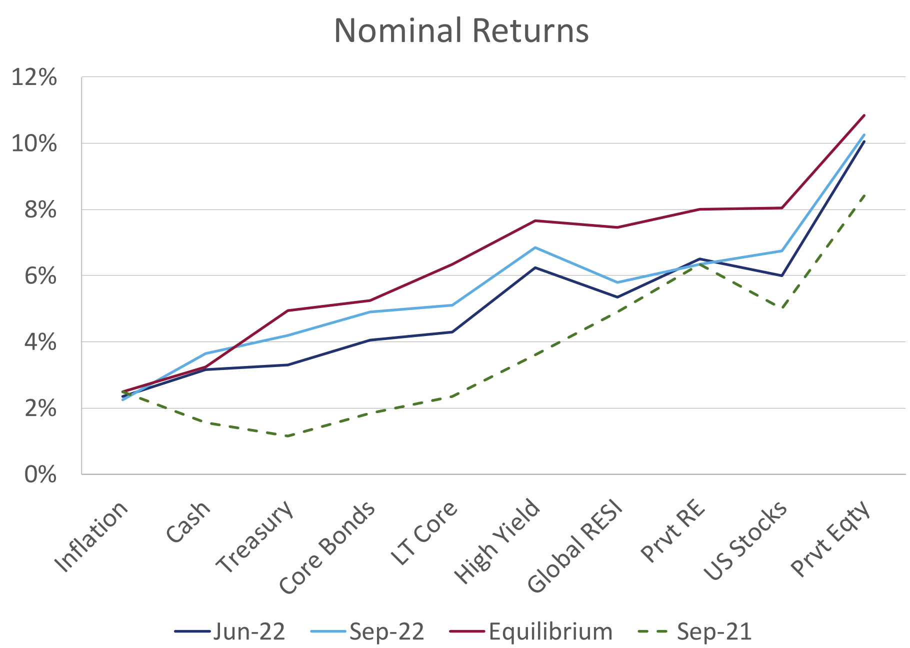
Asset Class Assumption	Total Return (%) Jun 2022	Change	Sep 2022	Risk (%)
U.S. TIPS	3.15	0.90	4.05	6.00
Global RE Securities	5.35	0.45	5.80	16.45
Private Real Estate	6.50	-0.15	6.35	14.00
Commodities	5.50	0.40	5.90	16.00
Inflation	2.35	-0.10	2.25	1.75

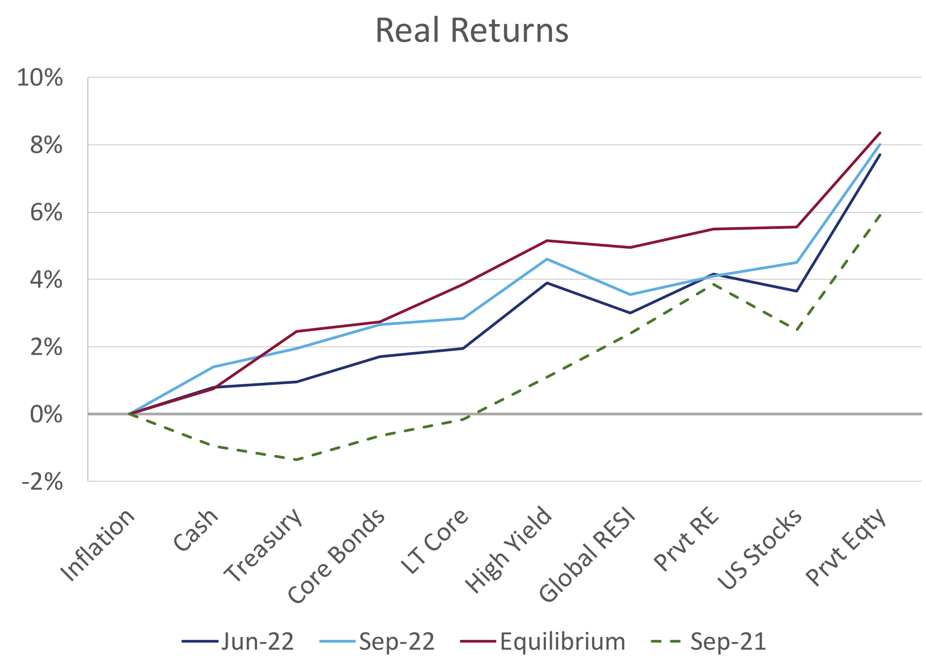
Real Assets		Jun 2022	Change	Sep 2022
Listed	Inflation Capture (75%)	1.75	(0.05)	1.70
	REIT Yield	3.45	0.50	3.95
	Midstream Energy Yield	6.05	0.20	6.25
	Global Infrastructue Yield	3.50	0.21	3.71
Private	Real Estate Cap Rate	4.00	0.00	4.00
	Cost of Debt (Private)	5.55	0.55	6.10
	Infra. v RE Cap Rate Differential	0.05	(0.29)	(0.24)
	Infra. Leverage / RE Leverage	2.5	0.0	2.5

Wilshire

Equilibrium Assumptions

Current versus Equilibrium Asset Class Assumptions





Wilshire

CERS Policy

Wilshire

CERS Capital Market Assumptions

	Equity		Fixed Income			Inflation Protected	
	Public Equity	Private Equity	Core Fixed Income	Specialty Credit	Cash	Real Estate	Real Return
10-Yr Expected Return (%)	7.30	10.23	4.90	7.40	3.65	6.34	6.75
20-Yr Expected Return (%)	7.50	10.35	4.88	7.27	3.55	6.71	7.08
30-Yr Expected Return (%)	7.70	10.47	4.85	7.15	3.45	7.09	7.41
Expected Risk (%)	17.10	27.78	4.25	8.16	0.75	13.93	11.56
Cash Yield (%)	2.40	0.00	5.10	9.55	3.65	2.32	2.92
Correlations							
Public Equity	1.00						
Private Equity	0.74	1.00					
Core Fixed Income	0.20	0.32	1.00				
Specialty Credit	0.56	0.32	0.18	1.00			
Cash	-0.07	0.00	0.19	-0.10	1.00		
Real Estate	0.53	0.52	0.19	0.63	-0.05	1.00	
Real Return	0.62	0.51	0.16	0.61	-0.01	0.51	1.00

Wilshire’s asset class return, risk, and correlation assumptions are developed on multi-year forward looking expected rates of return and historical risk and correlation, adjusted to incorporate recent trends.

Public Market return expectations represent a passive investment in the asset class (beta). They do not reflect value added from active management (alpha).

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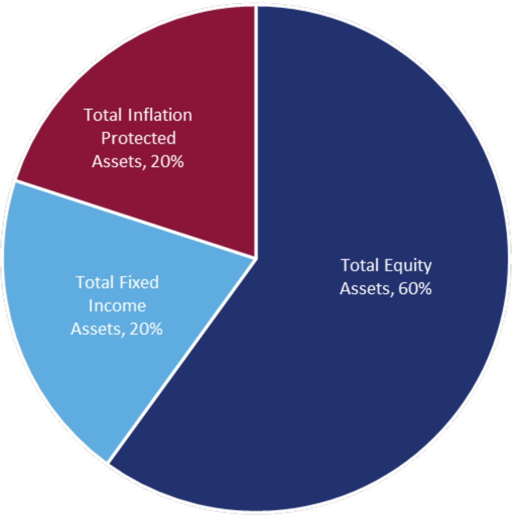
Current Policy

Asset Class	Weight
Public Equity	50%
Private Equity	10%
Total Equity Assets	60%
Core Fixed Income	10%
Specialty Credit	10%
Cash	0%
Total Fixed Income Assets	20%
Real Estate	7%
Real Return	13%
Total Inflation Protected Assets	20%



Using Wilshire’s September 30, 2022 Capital Market Assumptions

- Expected Return
  - 10-Years: 7.63%
  - 20-Years: 7.79%
  - 30 Years: 7.96%
- Expected Risk: 12.95%

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Important Information

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DISCLAIMER LAYOUT – COMPLIANCE CODE GOES HERE

Actuary Committee Strategic Plan

1.) The Board will require the actuary to use industry prevalence practices and methods for the analysis and recommendation of actuarial assumptions (economic and demographic) for use in the actuarial valuation.

    Implementation Date: November 2, 2022

2.) The Board will work with the legislators on possible future changes to the funding policy that is in Statute such that any changes will not result in actuarial back loading (i.e. negative amortization of the unfunded actuarial accrued liability).

    Implementation Date: January 1, 2023

3.) The financial goal is for the Systems to attain a 100% funded ratio in a reasonable time period with the Board certified contributions increasing or decreasing as appropriate.

    Implementation Date: January 1, 2038

4.) The Board will request the actuary to perform a risk analysis or stress test from time to time to understand and quantify possible financial risks due to possible changing economic conditions or risks associated possible legislation that would result in materially lower contributions.

    Implementation Date: January 1, 2025