



**County Employees Retirement System  
Board of Trustees – Special Meeting  
December 21, 2022 at 11:00 am ET (10:00 am CT)  
Live Video Conference/Facebook Live**

**AGENDA**

- |  |                          |
|--|--------------------------|
| <b>1. Call to Order</b>                                      | <b>Betty Pendergrass</b> |
| <b>2. Opening Statement</b>                                  | <b>Michael Board</b>     |
| <b>3. Roll Call</b>  | <b>Sherry Rankin</b>     |
| <b>4. Public Comment</b>                                     | <b>Sherry Rankin</b>     |
| <b>5. Resolution to Honor Ed Davis</b>                       | <b>Betty Pendergrass</b> |
| <b>6. Investment Objectives*</b>                             | <b>Dr. Merl Hackbart</b> |
| <b>a. Investment strategies</b>                              |                          |
| <b>b. Capital Market analysis</b>                            |                          |
| <b>c. Asset Allocation</b>                                   |                          |
| <b>d. Investment Policy Statement and Procurement Policy</b> |                          |
| <b>7. Actuarial Assumptions*</b>                             | <b>Mike Foster</b>       |
| <b>a. Demographics</b>                                       |                          |
| <b>b. Discount rate</b>                                      |                          |
| <b>c. Funding objectives</b>                                 |                          |
| <b>8. Closed Session*</b>                                    | <b>Eric Branco</b>       |
| <b>9. Adjourn</b>  | <b>Betty Pendergrass</b> |

**\*Board May Take Action**

CERS Special Called Board Meeting - Investment Objectives

<b>CERS &amp; CERS-HAZ - PENSION FUND PLAN NET RETURNS - 09/30/22</b>											
Plan	Market Value	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
<b>CERS</b>	<b>7,679,454,575.27</b>	<b>-4.98</b>	<b>-2.96</b>	<b>-2.96</b>	<b>-9.80</b>	<b>4.57</b>	<b>5.10</b>	<b>6.56</b>	<b>6.87</b>	<b>7.55</b>	<b>8.67</b>
KY Ret. CKERS Plan IPS Index		-5.97	-4.74	-4.74	-11.84	3.56	4.36	6.18	6.87	7.42	8.65
<b>CERS- H</b>	<b>2,630,209,582.33</b>	<b>-5.00</b>	<b>-2.97</b>	<b>-2.97</b>	<b>-9.97</b>	<b>4.44</b>	<b>5.02</b>	<b>6.53</b>	<b>6.85</b>	<b>7.54</b>	<b>8.66</b>
KY Ret. CERS Haz Plan IPS Index		-5.97	-4.74	-4.74	-11.84	3.56	4.36	6.18	6.87	7.42	8.65

<b>CERS INS &amp; CERS HAZ INS - INSURANCE FUND - PLAN NET RETURNS - 09/30/22</b>											
Plan	Market Value	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
<b>CERS INS</b>	<b>2,911,940,125.11</b>	<b>-4.98</b>	<b>-3.04</b>	<b>-3.04</b>	<b>-9.56</b>	<b>4.31</b>	<b>5.01</b>	<b>6.43</b>	<b>6.80</b>	<b>6.64</b>	<b>7.14</b>
KY Ins. CERS Plan IPS Index		-5.97	-4.74	-4.74	-11.81	3.25	4.17	6.13	7.06	6.82	7.30
<b>CERS - H INS</b>	<b>1,455,568,442.84</b>	<b>-4.92</b>	<b>-3.03</b>	<b>-3.03</b>	<b>-9.27</b>	<b>4.49</b>	<b>5.15</b>	<b>6.52</b>	<b>6.85</b>	<b>6.67</b>	<b>7.17</b>
KY Ins. CERS Haz Plan IPS Index		-5.97	-4.74	-4.74	-11.81	3.25	4.17	6.13	7.06	6.82	7.30

<b>CERS &amp; CERS-HAZ - PENSION FUND PLAN NET RETURNS - 10/31/22</b>											
Plan	Market Value	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
<b>CERS</b>	<b>7,933,430,377.95</b>	<b>3.31</b>	<b>-3.85</b>	<b>0.25</b>	<b>-9.06</b>	<b>5.27</b>	<b>5.59</b>	<b>6.89</b>	<b>6.92</b>	<b>7.65</b>	<b>8.74</b>
KY Ret. CKERS Plan IPS Index		4.06	-4.22	-0.87	-10.58	4.57	5.00	6.60	6.89	7.56	8.74
<b>CERS- H</b>	<b>2,720,935,088.48</b>	<b>3.33</b>	<b>-3.85</b>	<b>0.26</b>	<b>-9.18</b>	<b>5.15</b>	<b>5.52</b>	<b>6.86</b>	<b>6.90</b>	<b>7.63</b>	<b>8.74</b>
KY Ret. CERS Haz Plan IPS Index		4.06	-4.22	-0.87	-10.58	4.57	5.00	6.60	6.89	7.56	8.74

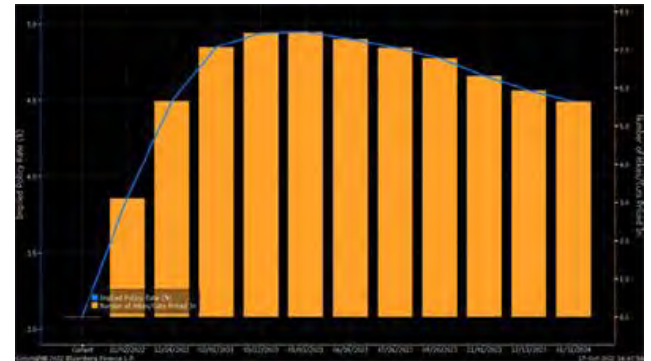
<b>CERS INS &amp; CERS HAZ INS - INSURANCE FUND - PLAN NET RETURNS - 10/31/22</b>											
Plan	Market Value	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
<b>CERS INS</b>	<b>3,010,299,071.97</b>	<b>3.43</b>	<b>-3.79</b>	<b>0.28</b>	<b>-8.41</b>	<b>5.05</b>	<b>5.52</b>	<b>6.78</b>	<b>6.74</b>	<b>6.78</b>	<b>7.22</b>
KY Ins. CERS Plan IPS Index		4.06	-4.22	-0.87	-10.25	4.23	4.80	6.56	6.95	6.99	7.40
<b>CERS - H INS</b>	<b>1,501,218,420.30</b>	<b>3.37</b>	<b>-3.76</b>	<b>0.24</b>	<b>-8.20</b>	<b>5.21</b>	<b>5.65</b>	<b>6.87</b>	<b>6.78</b>	<b>6.81</b>	<b>7.25</b>
KY Ins. CERS Haz Plan IPS Index		4.06	-4.22	-0.87	-10.25	4.23	4.80	6.56	6.95	6.99	7.40

**Wilshire**

# Economic & Market Update

December 21, 2022

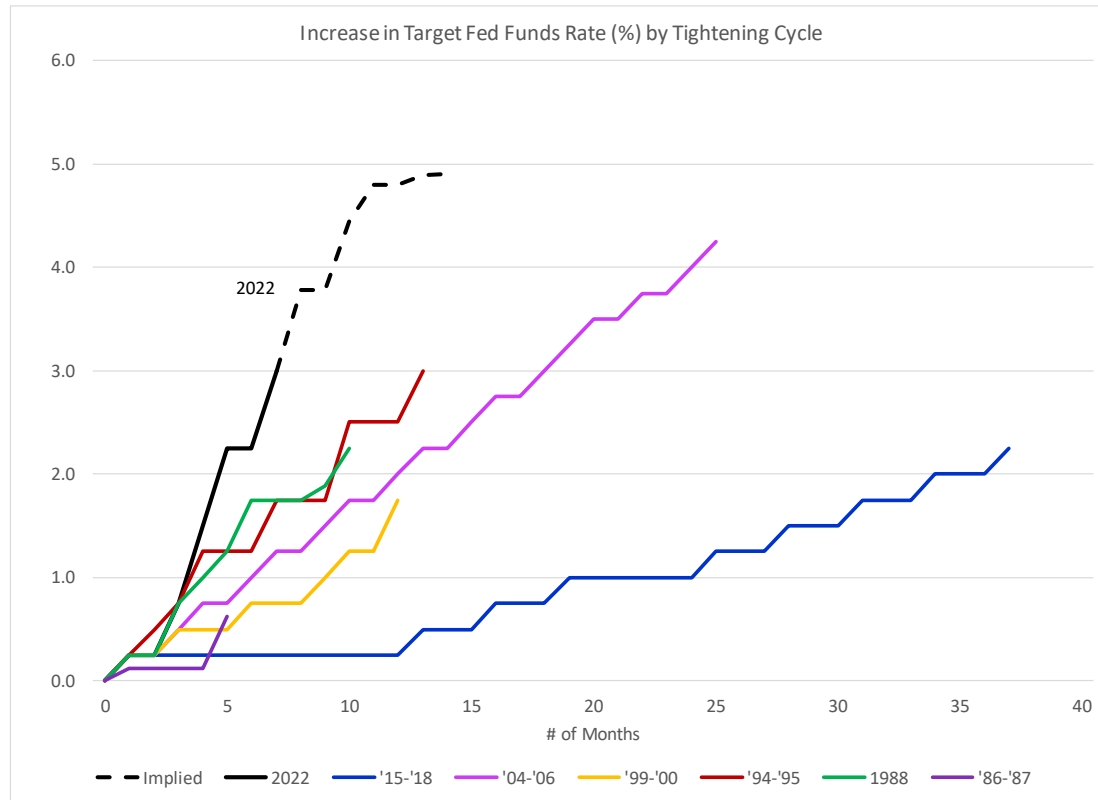
### Center Stage: Fed Actions & Expectations



12/14 (federalreserve.gov): The FOMC raised rates for the 7<sup>th</sup> time in 2022, this time by 50bps resulting in a target Federal Funds Rate of 4.25-4.50%.

Data Source: Bloomberg

## Most Aggressive Tightening in Modern Era... When/If it Bites, It Might Hurt



Data Source: Bloomberg

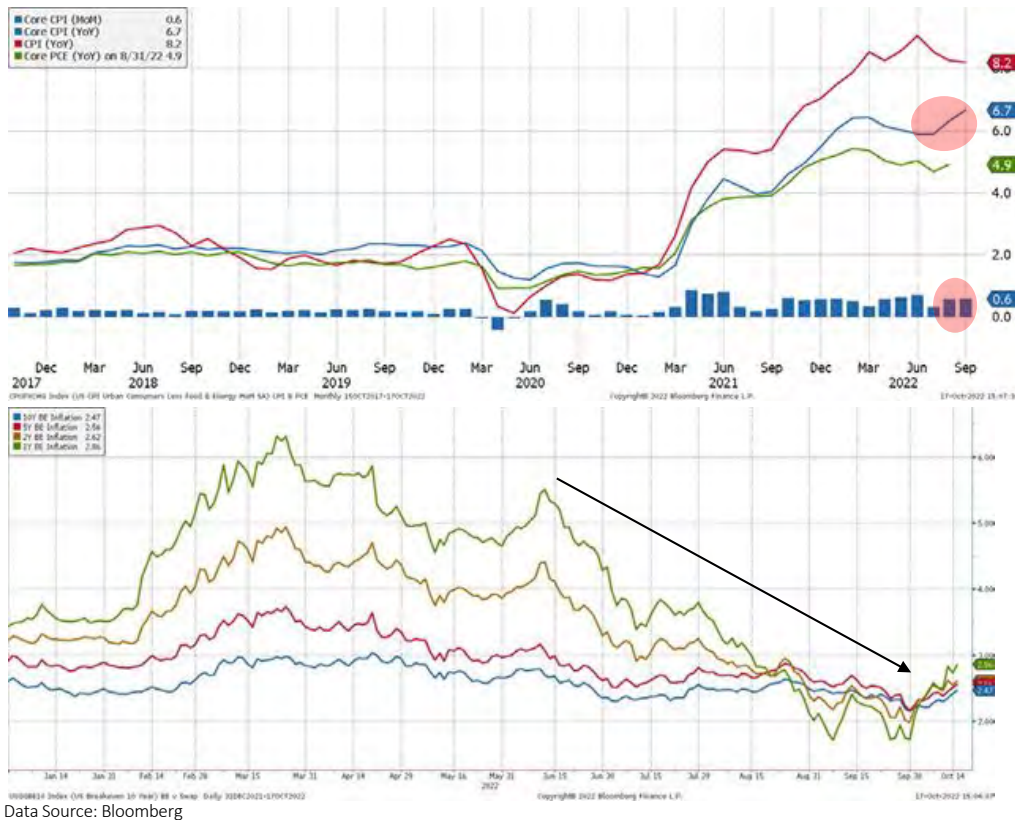
*“While higher interest rates, slower growth, and softer labor market conditions will bring down inflation, they will also bring some pain to households and businesses. These are the unfortunate costs of reducing inflation. But a failure to restore price stability would mean far greater pain.”*



Jerome Powell

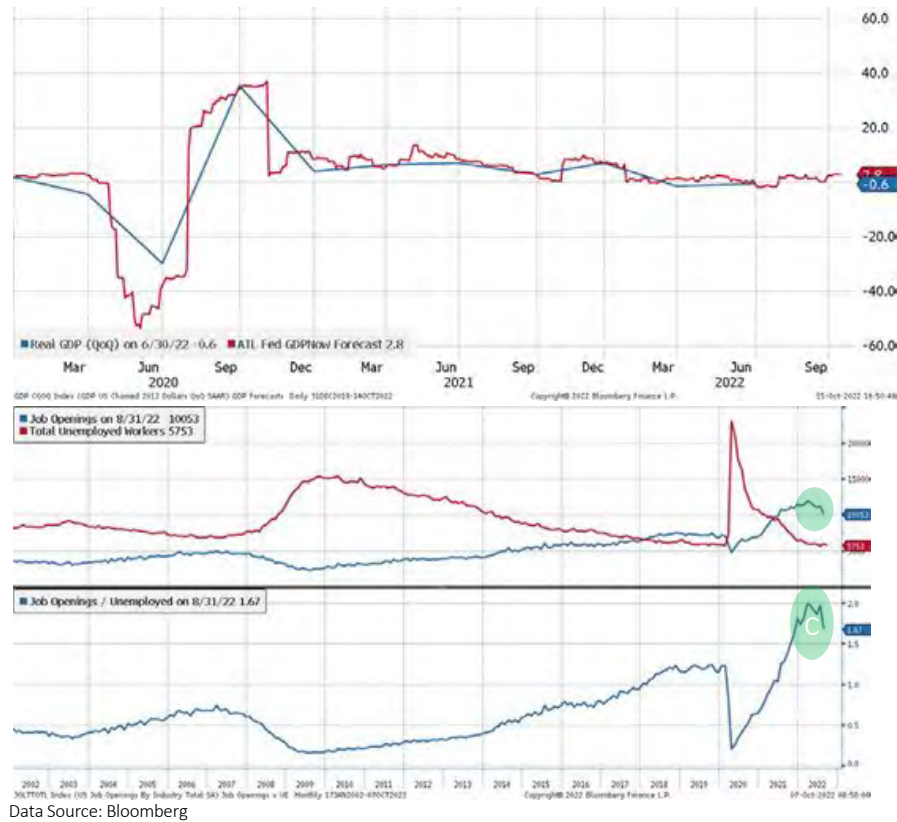
August 2022, Jackson Hole

## The Fed's Dashboard: Realized & Expected Inflation



- Realized inflation remains stubbornly high
  - Sept & Oct Core CPI exceeded expectations
  - Core CPI (YoY) has ticked higher in recent months (as we anticipated last quarter)
  - Wage inflation & labor market imbalances add to inflation persistency/stickiness
- Inflation expectations have come down
  - Suggests that inflation anchoring at high levels may not yet be fully entrenched in consumer/business sentiment
  - Expectational anchoring at higher-levels would make the Fed's job even more challenging

## The Fed's Dashboard: Economic Growth & Labor Market



- The odds of a “soft landing” diminish as inflation persists (as the Fed is pressured to tighten aggressively)
  - Potential outcome may be somewhere between a hard and soft landing
  - Powell’s “Sully” Sullenberger moment...



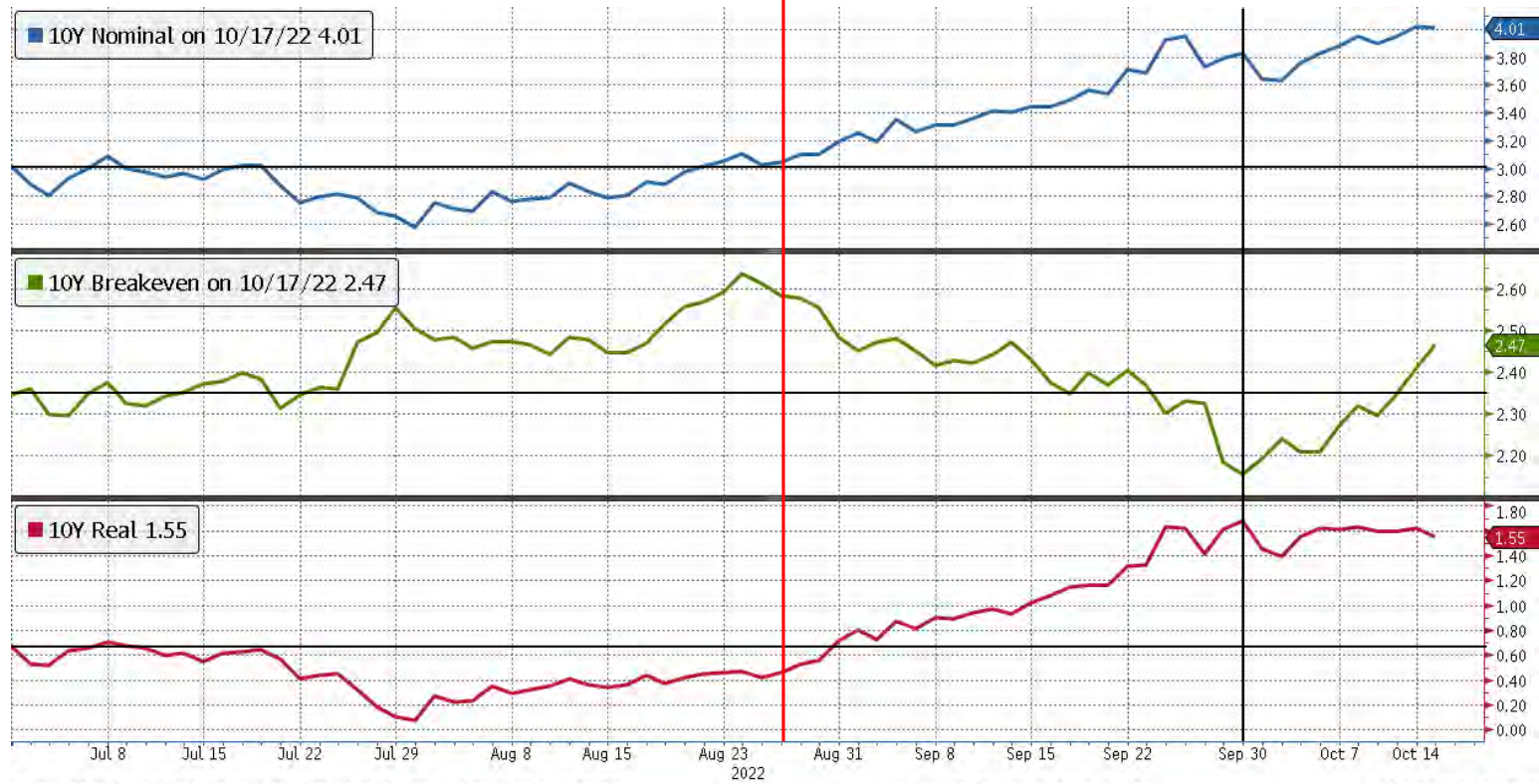
*“We’re going to be in the Hudson”*

Chesley Burnett "Sully" Sullenberger III  
Pilot of US Airways 1549, January 15, 2009

- Labor markets remain historically tight
  - Difficult to see inflation pressures easing to acceptable levels without these tensions reversing
  - Recent jobs reports remain strong (good news is bad news as it relates to the Fed’s current objectives)

### Rate Moves (10Y Nominal, Real & BEI)

The Jackson Hole  
Wake Up Call



USGG10YR Index (US Generic Govt 10 Yr) 10yr Splits Daily 30JUN2022-17OCT2022  
Data Source: Bloomberg

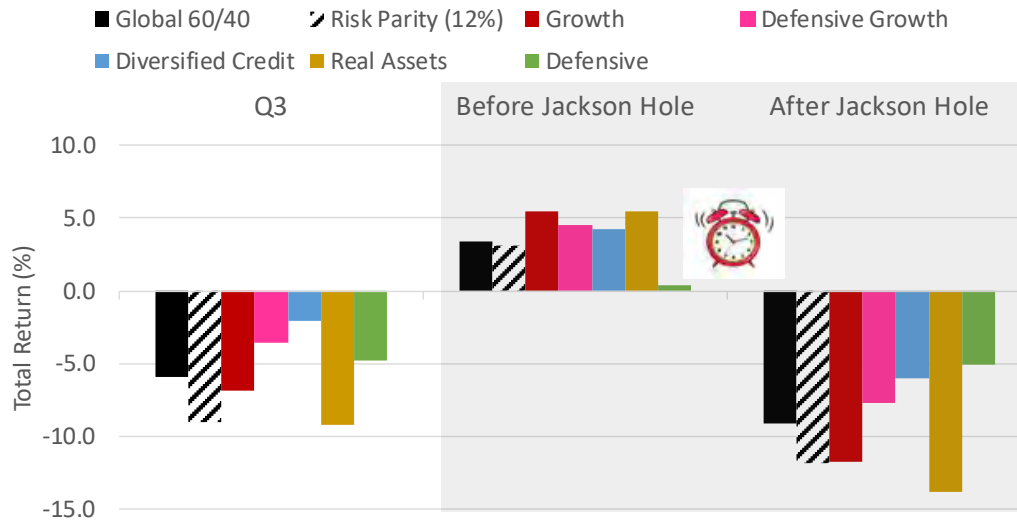
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## Q3 Market Returns: Before & After Jackson Hole

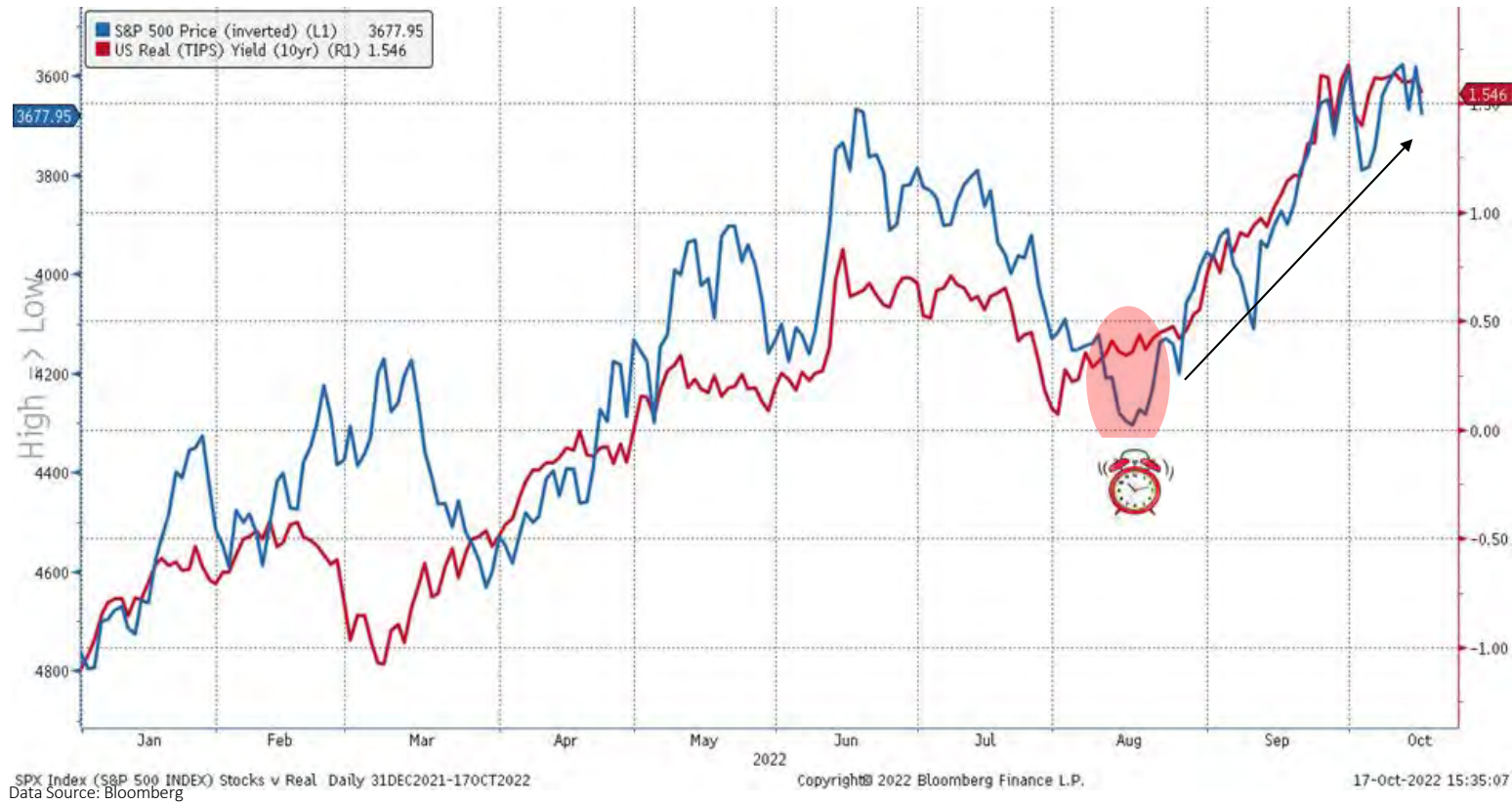
Asset Allocation & Thematic Returns



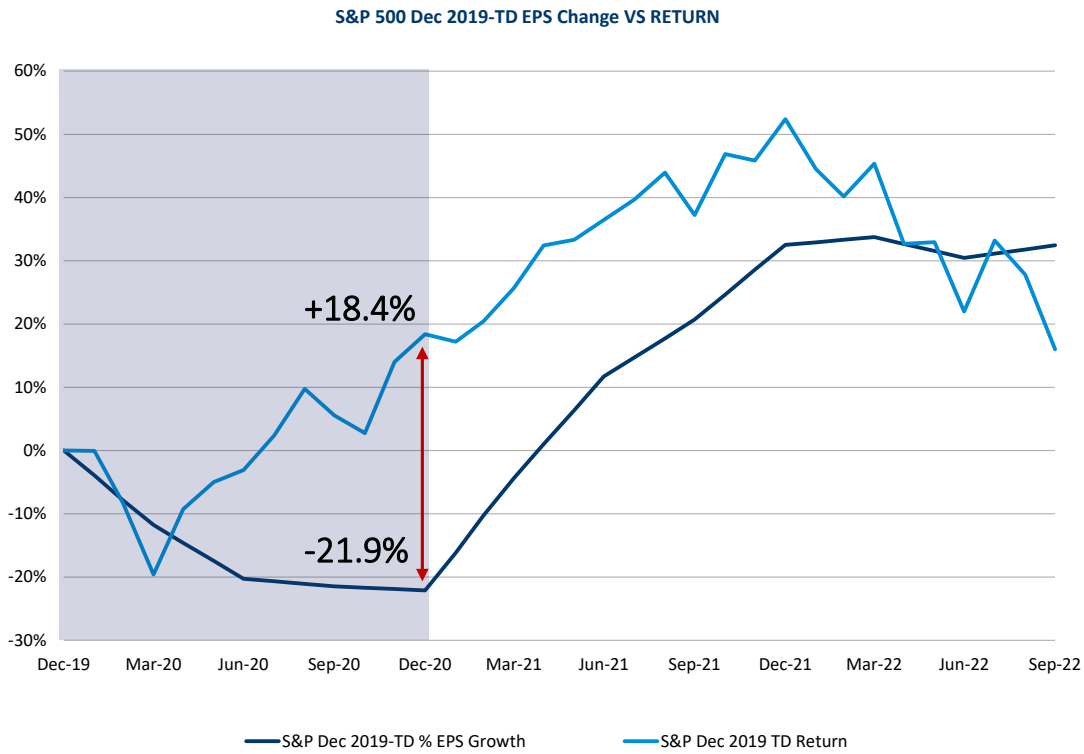
	Q3	Before Jackson Hole	After Jackson Hole
Global 60/40	(5.94)	3.44	(9.07)
Risk Parity (12%)	(9.03)	3.14	(11.80)
Growth	(6.82)	5.51	(11.68)
Defensive Growth	(3.54)	4.54	(7.73)
Diversified Credit	(2.03)	4.23	(6.01)
Real Assets	(9.14)	5.42	(13.81)
Defensive	(4.75)	0.36	(5.10)

Data Source: Bloomberg, Wilshire

### Liquidity/Rates-driven Market: Plenty of downside left if fundamentals deteriorate



EPS Growth since Dec 2020 (prices down as growth stalls)

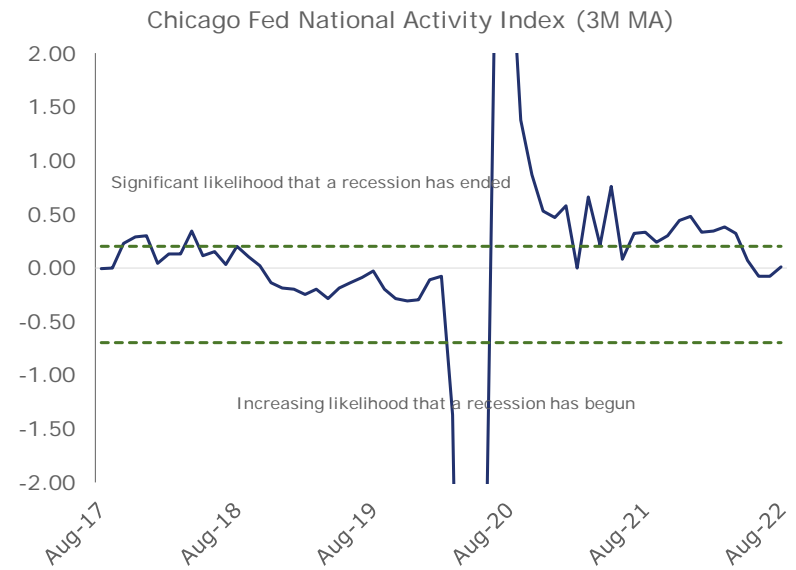
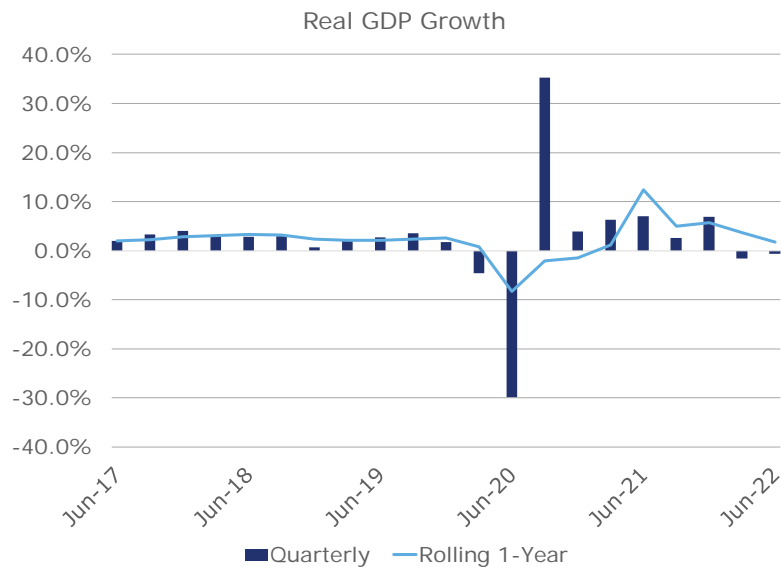


Data Source: Bloomberg

Wilshire

# Economic/Market Activity

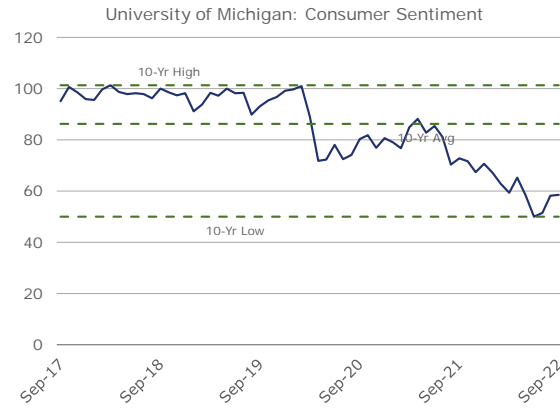
# Economic Growth



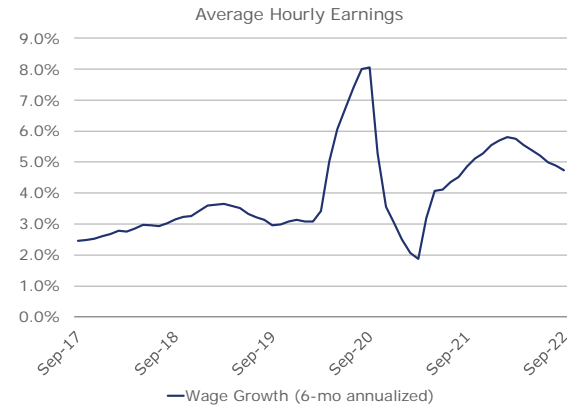
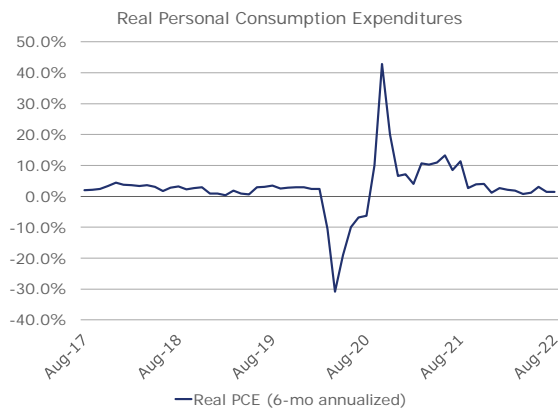
11/30 (BEA.gov):3Q GDP grew at a 2.9% annual rate according to the second estimate

Data Source: Bloomberg

# Consumer Activity

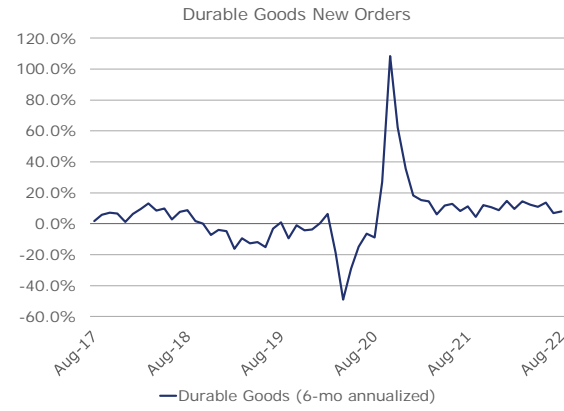
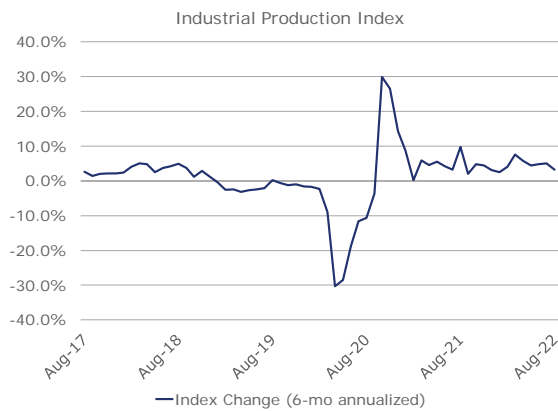
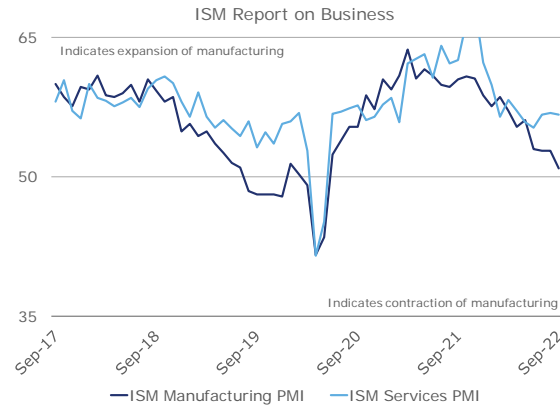


12/9 (Reuters): The University of Michigan's preliminary December reading on the overall index of consumer sentiment came in at 59.1, up from 56.8 in the prior month. Economists polled by Reuters had forecast a preliminary reading of 56.9.



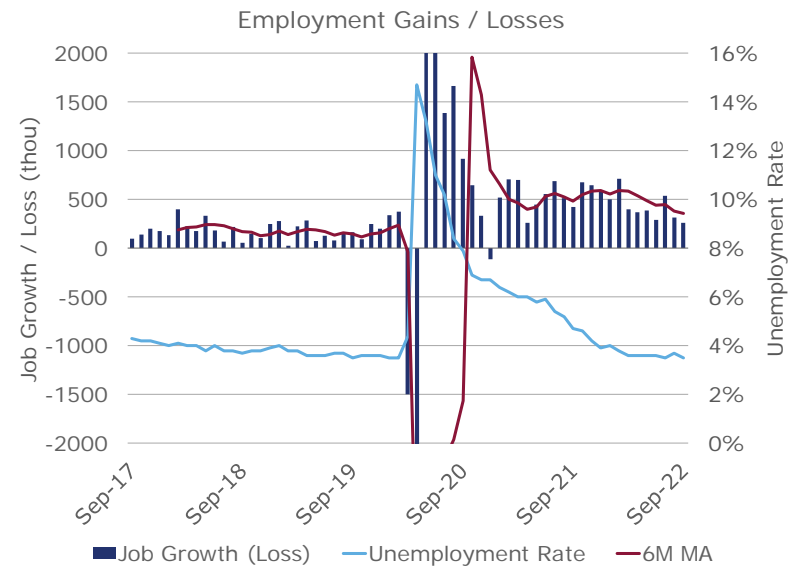
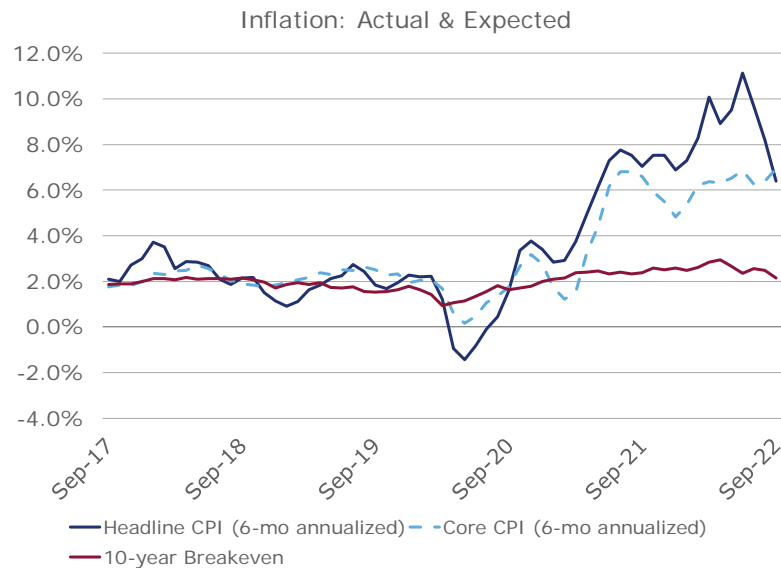
Data Source: Bloomberg

# Business Activity



Data Source: Bloomberg

# Inflation And Employment



12/13 (BLS.gov): CPI rose 0.1% for November and 7.1% over the past year (Core CPI 6.0%), the lowest annual rate since December 2021.  
 12/2 (BLS.gov): Total nonfarm payroll employment increased by 263,000 in November, and the unemployment rate was unchanged at 3.7 percent

Data Source: Bloomberg



## Market Dashboard

Returns through Friday December 9, 2022

Portfolio Allocations	WTD	MTD	NOV	OCT	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
Global 60/40	(1.50)	(0.72)	6.13	3.10	8.63	(5.94)	(14.45)	(13.59)	2.97	4.08
Wilshire Risk Parity (12%)	(1.66)	(0.75)	4.23	3.43	7.00	(9.03)	(18.99)	(18.44)	(0.51)	3.52
Strategic Allocation Themes *	WTD	MTD	NOV	OCT	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
Growth <sup>1</sup>	(2.22)	(1.80)	7.76	6.03	12.21	(6.82)	(16.55)	(15.23)	5.93	6.08
Defensive Growth <sup>2</sup>	(1.70)	(1.36)	4.39	3.79	6.87	(3.54)	(12.74)	(10.90)	5.44	6.95
Diversified Credit <sup>3</sup>	(0.09)	0.94	4.32	1.30	6.67	(2.03)	(11.61)	(11.34)	(1.03)	1.23
Real Assets <sup>4</sup>	(2.06)	(1.44)	5.30	2.70	6.58	(9.14)	(8.78)	(5.68)	5.98	5.75
Defensive <sup>5</sup>	(0.44)	0.89	3.68	(1.30)	3.25	(4.75)	(11.84)	(11.72)	(2.26)	0.33
Major Asset Classes	WTD	MTD	NOV	OCT	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
FT Wilshire 5000	(3.60)	(3.71)	5.15	8.21	9.56	(4.45)	(17.18)	(15.54)	9.32	9.70
MSCI ACWI-ex-USA (Net)	(0.28)	1.11	11.80	2.99	16.42	(9.91)	(14.43)	(13.61)	1.92	1.84
Bloomberg U.S. Aggregate	(0.44)	0.89	3.68	(1.30)	3.25	(4.75)	(11.84)	(11.72)	(2.26)	0.33
Bloomberg U.S. Corporate High Yield	(0.19)	0.72	2.17	2.60	5.58	(0.65)	(9.98)	(9.28)	1.01	2.64
Wilshire Global Real Estate Securities	(1.32)	(1.70)	6.93	3.51	8.81	(11.20)	(23.18)	(19.88)	(1.83)	2.33
Bloomberg Commodity	(2.31)	(3.62)	2.74	1.99	0.99	(4.11)	14.70	17.82	13.53	7.23

Source: Bloomberg, All returns are in USD

\* Strategic Allocations are comprised of the following asset mixes (rebalanced monthly)

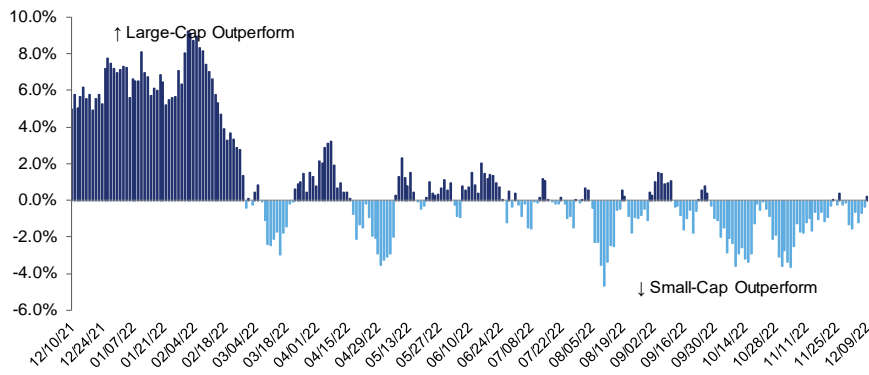
<sup>1</sup> Growth : 100% Global Equity<sup>2</sup> Defensive Growth : 60% Low Vol Global Equity, 40% US Convertibles<sup>3</sup> Diversified Credit : 42.5% U.S. High Yield, 42.5% EMD, 15% Banks Loans<sup>4</sup> Real Assets : 43% Global REITS/GLI, 33% Commodities, 48% TIPS, 9% Gold, -31% Cash<sup>5</sup> Defensive : 100% US Core Bonds

## U.S. Equity

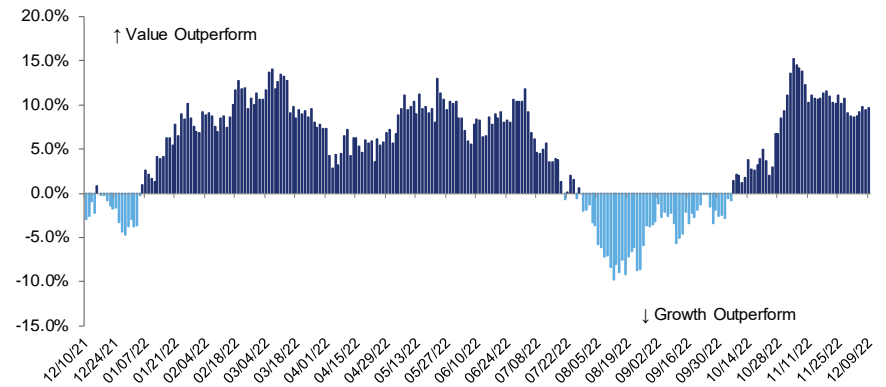
Returns though Friday December 9, 2022

US Equity	WTD	MTD	NOV	OCT	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
FT Wilshire 5000	(3.60)	(3.71)	5.15	8.21	9.56	(4.45)	(17.18)	(15.54)	9.32	9.70
Standard & Poor's 500	(3.35)	(3.52)	5.59	8.10	10.12	(4.88)	(16.17)	(14.33)	9.62	10.14
Wilshire 4500 Completion	(4.67)	(4.43)	3.44	8.65	7.41	(2.48)	(22.37)	(21.54)	6.88	6.85
Wilshire US Large Cap	(3.47)	(3.63)	5.34	7.95	9.59	(4.52)	(17.11)	(15.43)	9.69	10.14
Wilshire US Large-Cap Growth	(3.88)	(4.12)	4.18	5.10	4.98	(3.27)	(26.58)	(25.65)	9.84	11.04
Wilshire US Large-Cap Value	(3.06)	(3.15)	6.51	10.99	14.49	(5.84)	(4.89)	(1.99)	9.32	9.11
Wilshire US Small Cap	(4.86)	(4.49)	3.54	11.00	9.78	(3.54)	(17.25)	(15.89)	5.92	5.65
Wilshire US Small-Cap Growth	(4.90)	(4.33)	3.66	10.10	9.18	(2.04)	(21.56)	(20.59)	4.71	5.78
Wilshire US Small-Cap Value	(4.83)	(4.62)	3.44	11.82	10.32	(4.86)	(12.92)	(11.14)	7.06	5.47

### Relative Performance – Rolling Three Months Returns



Data Source: Bloomberg



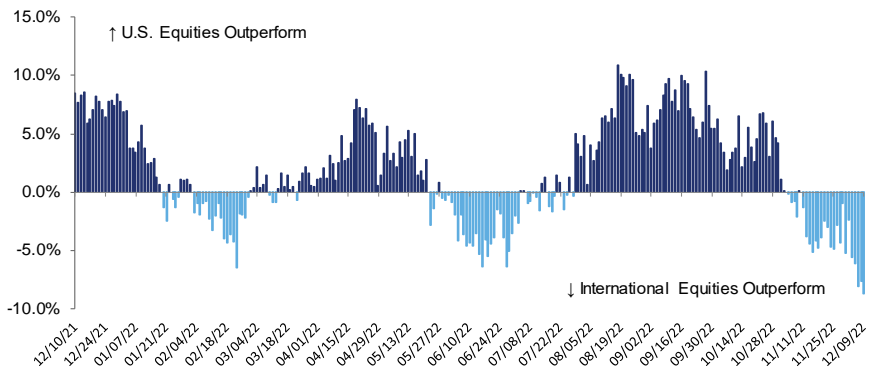
## Global Equity

Non-US Equity	WTD	MTD	NOV	OCT	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
MSCI ACWI-ex-USA (Net)	(0.28)	1.11	11.80	2.99	16.42	(9.91)	(14.43)	(13.61)	1.92	1.84
MSCI EAFE (Net)	(0.20)	1.83	11.26	5.38	19.39	(9.36)	(12.96)	(11.40)	2.37	2.37
MSCI EM (Net)	0.48	0.65	14.83	(3.10)	11.99	(11.57)	(18.43)	(19.31)	(0.00)	(0.11)
MSCI ACWI-ex-US Small cap (Net)	(1.11)	0.99	9.56	3.25	14.24	(8.37)	(19.31)	(17.90)	2.58	1.73

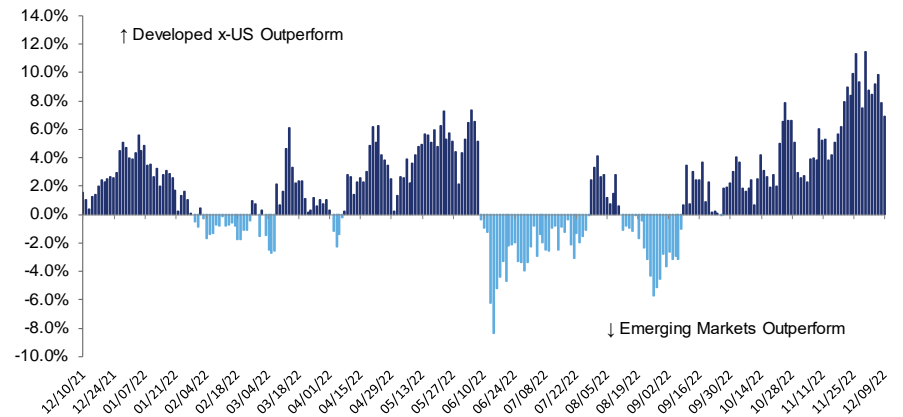
  

Global Equity	WTD	MTD	NOV	OCT	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
MSCI ACWI (Net)	(2.22)	(1.80)	7.76	6.03	12.21	(6.82)	(16.55)	(15.23)	5.93	6.08
MSCI ACWI Minimum Volatility (Net)	(1.24)	(1.04)	6.26	4.15	9.53	(6.03)	(9.45)	(6.61)	2.50	4.97

### Relative Performance – Rolling Three Months Returns



Data Source: Bloomberg. All returns are in USD



## Fixed Income

Returns though Friday December 9, 2022

Fixed Income	WTD	MTD	NOV	OCT	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
Bloomberg U.S. Aggregate	(0.44)	0.89	3.68	(1.30)	3.25	(4.75)	(11.84)	(11.72)	(2.26)	0.33
Bloomberg Long Term Treasury	(0.67)	3.24	7.07	(5.55)	4.41	(9.63)	(25.70)	(25.80)	(6.45)	(1.10)
Bloomberg U.S. TIPS	(1.54)	0.31	1.83	1.24	3.41	(5.14)	(10.66)	(9.78)	1.70	2.49
Bloomberg U.S. Corporate High Yield	(0.19)	0.72	2.17	2.60	5.58	(0.65)	(9.98)	(9.28)	1.01	2.64
Credit Suisse Leveraged Loan	(0.04)	0.08	1.11	0.85	2.05	1.19	(1.33)	(1.05)	2.59	3.24
Bloomberg US Convertibles Index	(2.10)	(1.39)	1.91	2.59	3.09	(0.31)	(17.73)	(17.54)	9.85	9.40
JPM EMBI Global Diversified	(0.01)	1.47	7.59	0.15	9.34	(4.57)	(16.85)	(16.98)	(4.42)	(0.98)

### Market Yields

Govt/Treasury Yields	12/09/22	Previous 3 Month-ends			Previous 2 Quarter-ends		EOY Prior	1 Yr Ago	3 Yrs Ago	5 Yrs Ago
	12/09/22	11/30/22	10/31/22	09/30/22	09/30/22	06/30/22	12/31/21	12/09/21	12/09/19	12/08/17
Fed Funds Target Rate (Upper)	4.00	4.00	3.25	3.25	3.25	1.75	0.25	0.25	1.75	1.25
2-Year Treasury	4.35	4.31	4.49	4.28	4.28	2.96	0.73	0.69	1.62	1.80
5-Year Treasury	3.77	3.74	4.23	4.09	4.09	3.04	1.26	1.27	1.66	2.14
10-Year Treasury	3.58	3.61	4.05	3.83	3.83	3.02	1.51	1.50	1.82	2.38
30-Year Treasury	3.56	3.74	4.17	3.78	3.78	3.19	1.90	1.88	2.26	2.77
10-Year Real Treasury	1.31	1.24	1.54	1.68	1.68	0.67	(1.10)	(1.01)	0.12	0.49

Term Spreads	12/09/22	11/30/22	10/31/22	09/30/22	09/30/22	06/30/22	12/31/21	12/09/21	12/09/19	12/08/17
5 - 2 Year Treasury Spread	(0.58)	(0.58)	(0.26)	(0.19)	(0.19)	0.08	0.53	0.58	0.04	0.34
10 - 5 Year Treasury Spread	(0.19)	(0.13)	(0.18)	(0.26)	(0.26)	(0.03)	0.25	0.23	0.16	0.23
10 - 2 Year Treasury Spread	(0.77)	(0.71)	(0.44)	(0.45)	(0.45)	0.05	0.77	0.81	0.20	0.58
30 - 10Year Treasury Spread	(0.03)	0.13	0.11	(0.06)	(0.06)	0.16	0.39	0.37	0.43	0.39
30 - 2Year Treasury Spread	(0.79)	(0.58)	(0.32)	(0.51)	(0.51)	0.22	1.17	1.18	0.64	0.97

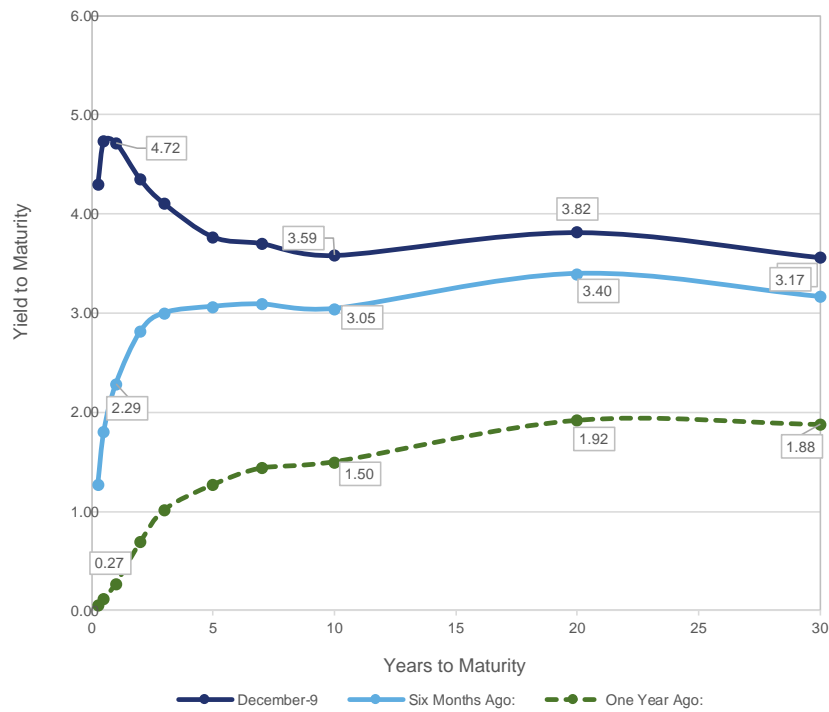
Market Yields	12/09/22	11/30/22	10/31/22	09/30/22	09/30/22	06/30/22	12/31/21	12/09/21	12/09/19	12/08/17
Bloomberg U.S. Treasury YTW	3.99	4.05	4.39	4.13	4.13	3.09	1.23	1.23	1.80	2.15
Bloomberg U.S. Aggregate YTW	4.49	4.56	5.01	4.75	4.75	3.72	1.75	1.77	2.33	2.70
Bloomberg U.S. Long Treasury YTW	3.77	3.96	4.37	4.00	4.00	3.33	1.89	1.88	2.23	2.72
Bloomberg U.S. Long Govt/Credit YTW	4.59	4.79	5.33	5.03	5.03	4.30	2.58	2.58	3.02	3.54

Credit Spreads	12/09/22	11/30/22	10/31/22	09/30/22	09/30/22	06/30/22	12/31/21	12/09/21	12/09/19	12/08/17
Bloomberg Investment Grade OAS	1.30	1.33	1.58	1.59	1.59	1.55	0.92	0.96	1.01	0.97
Bloomberg High Yield OAS	4.37	4.48	4.64	5.52	5.52	5.69	2.83	2.99	3.50	3.47

Data Source: Bloomberg

## Yield Curve

U.S. Treasury Yield Curve



- Bloomberg Universal
- Bloomberg U.S. Aggregate
- Bloomberg Gov't/Credit
- Bloomberg Gov't
- Bloomberg Long Treasuries
- Bloomberg Credit
- Bloomberg Corporate
- Bloomberg High Yield
- Bloomberg Global EMD

Option Adj. Duration	Coupon	Yield to Maturity	Yield to Worst	Time to Maturity	Price
6.07	2.95	4.90	4.90	8.38	89.62
6.29	2.67	4.49	4.49	8.57	90.15
6.58	2.63	4.46	4.46	9.06	90.53
5.38	2.78	4.59	4.59	8.38	93.20
16.46	2.56	3.77	3.77	23.27	81.16
6.29	2.98	4.71	4.71	8.93	90.91
7.33	3.72	5.20	5.20	11.21	90.93
4.11	5.32	9.13	9.11	6.26	82.75
7.46	4.74	7.74	7.74	12.97	79.28

Constant Maturity Treasury Rates

	3 Mo	6 Mo	1 Yr	2 Yr	3 Yr	5 Yr	7 Yr	10 Yr	20 Yr	30 Yr
December-9	4.30	4.74	4.72	4.35	4.10	3.77	3.71	3.59	3.82	3.57
Six Months Ago:	1.27	1.81	2.29	2.82	3.00	3.07	3.09	3.05	3.40	3.17
One Year Ago:	0.06	0.12	0.27	0.69	1.02	1.27	1.44	1.50	1.92	1.88

Data Source: Bloomberg

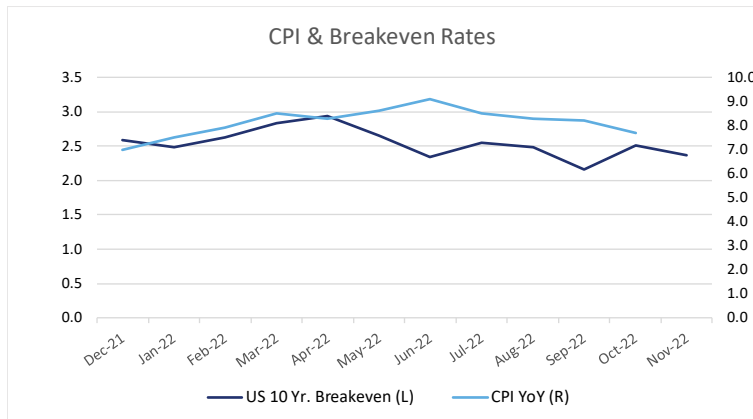
## Real Assets (Inflation-Sensitive)

Returns though Friday December 9, 2022

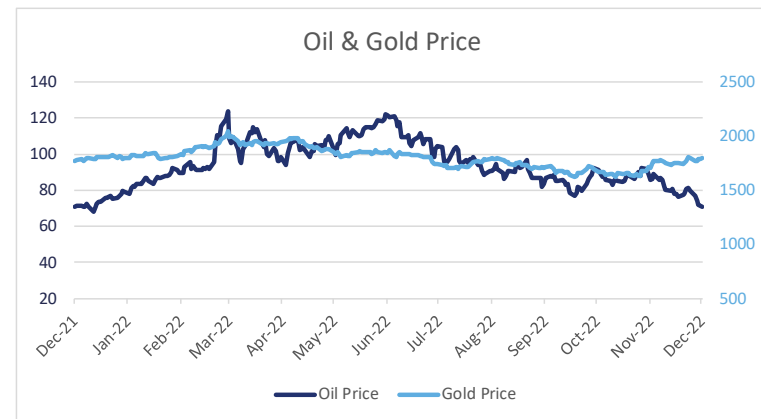
Real Assets	WTD	MTD	NOV	OCT	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
Wilshire Global Real Estate Securities	(1.32)	(1.70)	6.93	3.51	8.81	(11.20)	(23.18)	(19.88)	(1.83)	2.33
FTSE Global Core Infrastructure 50/50	(0.91)	(1.07)	7.94	3.39	10.40	(8.87)	(3.13)	0.31	4.06	5.62
Alerian Midstream Energy	(6.33)	(6.84)	3.85	11.05	7.44	(0.98)	20.48	21.35	10.59	7.37
Bloomberg Commodity	(2.31)	(3.62)	2.74	1.99	0.99	(4.11)	14.70	17.82	13.53	7.23
Gold	(0.02)	1.63	8.26	(1.63)	8.23	(8.12)	(1.74)	1.24	7.13	7.56
Bitcoin	0.58	0.05	(16.18)	5.05	(11.90)	3.70	(63.07)	(64.35)	32.50	1.81

Breakeven Inflation Rates	12/09/22	11/30/22	10/31/22	09/30/22	09/30/22	06/30/22	12/31/21	12/09/21	12/09/19	12/08/17
1-Year Breakeven Inflation	2.11	2.38	2.73	1.72	1.72	4.28	3.43	3.85	1.28	0.43
2-Year Breakeven Inflation	2.35	2.53	2.86	1.98	1.98	3.29	3.22	3.29	1.35	1.39
5-Year Breakeven Inflation	2.37	2.48	2.66	2.16	2.16	2.62	2.91	2.81	1.60	1.79
10-Year Breakeven Inflation	2.28	2.37	2.51	2.15	2.15	2.34	2.59	2.49	1.70	1.90
5-Year 5-Year Forward Breakeven Inflation	2.16	2.23	2.32	2.12	2.12	2.03	2.27	2.16	1.78	1.91



Data Source: Bloomberg



## Factor/Relative Returns

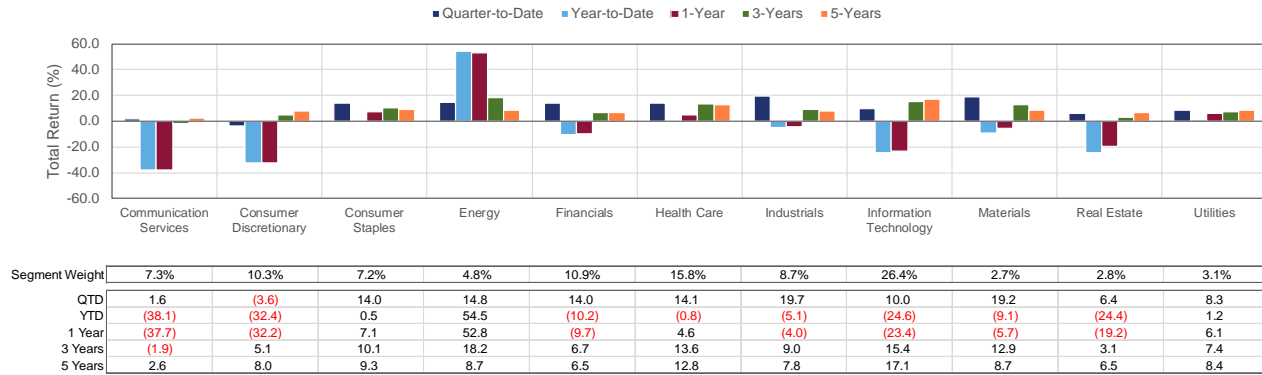
Returns though Friday December 9, 2022

<b>Asset Class Differentials</b>	<b>WTD</b>	<b>MTD</b>	<b>NOV</b>	<b>OCT</b>	<b>QTD</b>	<b>Q3 2022</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 Year</b>	<b>5 Year</b>
Stocks (ACWI) > Bonds (BB US Aggregate)	(1.78)	(2.69)	4.08	7.33	8.96	(2.07)	(4.71)	(3.51)	8.19	5.75
Stocks (ACWI) > Mkt Alts (Equity Hedged)	(0.78)	(0.19)	4.39	2.14	6.53	(3.30)	(10.81)	(10.01)	2.68	3.99
Mkt Alts (Relative Value) > Bonds (BB US Aggregate)	0.21	(0.54)	(1.54)	0.83	(1.23)	2.55	4.55	4.40	1.39	(0.19)
<b>Equity &amp; Real Assets Differentials</b>	<b>WTD</b>	<b>MTD</b>	<b>NOV</b>	<b>OCT</b>	<b>QTD</b>	<b>Q3 2022</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 Year</b>	<b>5 Year</b>
US Small > Large	(1.39)	(0.86)	(1.80)	3.05	0.19	0.98	(0.14)	(0.46)	(3.77)	(4.49)
US Value > Growth	0.82	0.96	2.33	5.89	9.50	(2.57)	21.69	23.66	(0.52)	(1.93)
ACWI-ex-US > US	3.32	4.82	6.66	(5.22)	6.86	(5.46)	2.75	1.93	(7.40)	(7.86)
EM > EAFE	0.68	(1.18)	3.57	(8.48)	(7.40)	(2.21)	(5.47)	(7.90)	(2.38)	(2.48)
ACWI-ex-US Currency Impact	0.04	1.48	4.03	(0.03)	5.81	(5.06)	(7.15)	(6.78)	(2.50)	(2.11)
EAFE Currency Impact	0.27	2.26	4.84	0.05	7.78	(5.77)	(8.43)	(7.98)	(2.76)	(2.12)
EM Currency Impact	(0.17)	0.31	3.15	(0.48)	2.87	(3.39)	(4.90)	(4.76)	(2.55)	(2.51)
Global Low Volatility > ACWI	0.98	0.76	(1.50)	(1.88)	(2.68)	0.79	7.10	8.62	(3.43)	(1.11)
Global RE > ACWI	0.90	0.10	(0.82)	(2.53)	(3.40)	(4.38)	(6.63)	(4.64)	(7.75)	(3.75)
Commodities > Global RE	(0.99)	(1.92)	(4.20)	(1.52)	(7.81)	7.09	37.88	37.69	15.36	4.90
Commodities > TIPS	(0.77)	(3.93)	0.91	0.75	(2.42)	1.04	25.36	27.60	11.83	4.74
Gold > Commodities	2.29	5.25	5.52	(3.62)	7.24	(4.01)	(16.44)	(16.58)	(6.40)	0.33
<b>Fixed Income Differentials</b>	<b>WTD</b>	<b>MTD</b>	<b>NOV</b>	<b>OCT</b>	<b>QTD</b>	<b>Q3 2022</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 Year</b>	<b>5 Year</b>
Duration (US Core > US Core 1-3 Years)	(0.34)	0.78	2.85	(1.17)	2.44	(3.25)	(8.03)	(7.99)	(1.89)	(0.52)
IG Credit > Treasury	0.15	0.62	2.50	0.36	3.51	(0.71)	(2.89)	(2.74)	0.10	0.74
High Yield > IG Credit	0.07	(0.68)	(3.01)	3.63	0.03	4.41	4.22	4.73	3.20	1.71
High Yield > Loans	(0.16)	0.62	0.93	1.57	3.20	(2.01)	(9.04)	(8.61)	(1.78)	(0.65)
TIPS > Treasury	(0.75)	(0.21)	(1.76)	2.66	0.77	0.39	2.83	3.64	4.50	2.31
EMD > Dev Hdg	0.03	0.87	5.07	(1.39)	4.56	(1.85)	(7.22)	(6.63)	(1.49)	(1.20)
EMD > High Yield	0.23	0.60	4.46	(3.48)	1.51	(3.41)	(4.88)	(5.67)	(4.33)	(2.91)
Non-US > US Core	0.64	1.68	1.90	1.15	4.89	(4.10)	(5.85)	(6.38)	(3.03)	(2.91)
Non-US Hdg > US Core	0.45	(0.44)	(2.11)	1.80	(0.71)	2.55	4.19	3.42	0.43	0.61
FI Currency Impact	0.20	2.12	4.01	(0.65)	5.60	(6.64)	(10.04)	(9.80)	(3.46)	(3.51)

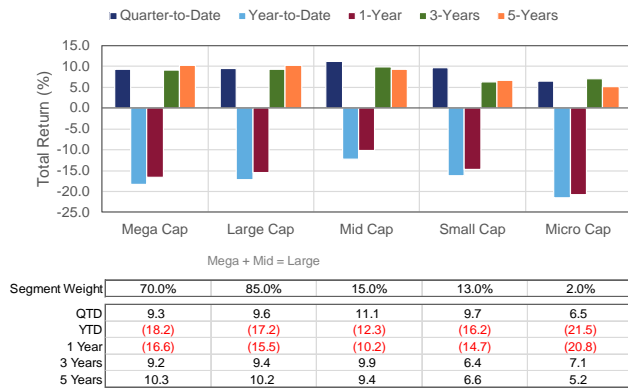
Data Source: Bloomberg

## Returns by Sector, Size & Factor

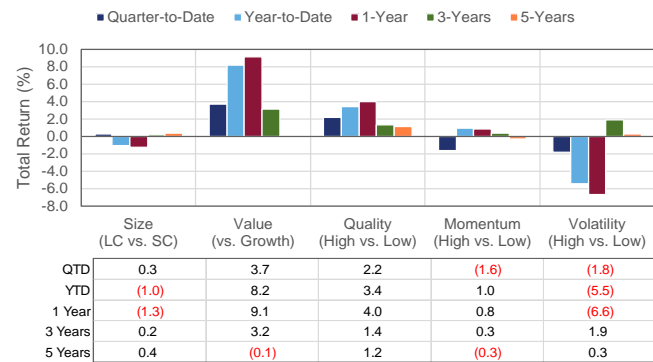
**S&P 500 GICS Sector Total Return**



**FT Wilshire 5000 Total Return by Size**



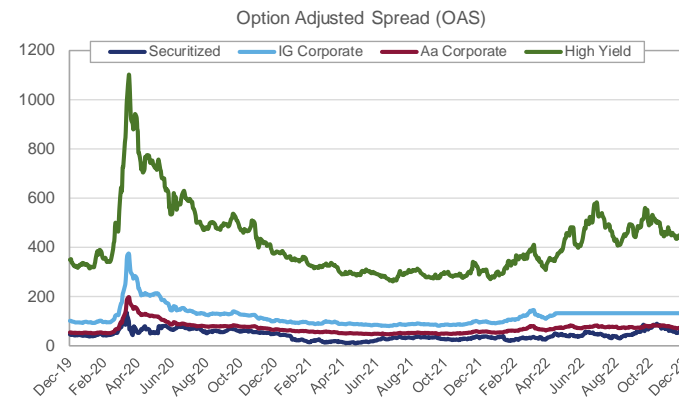
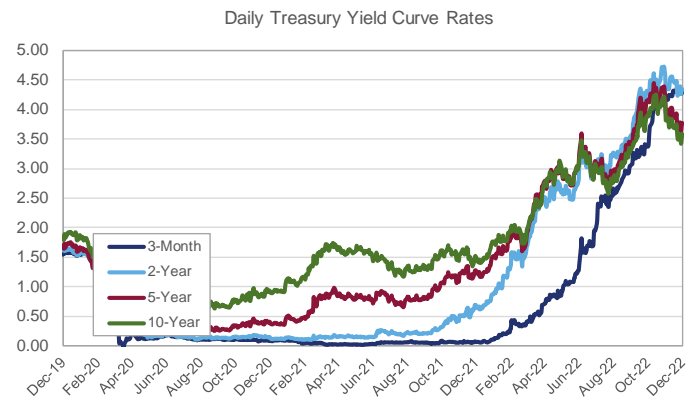
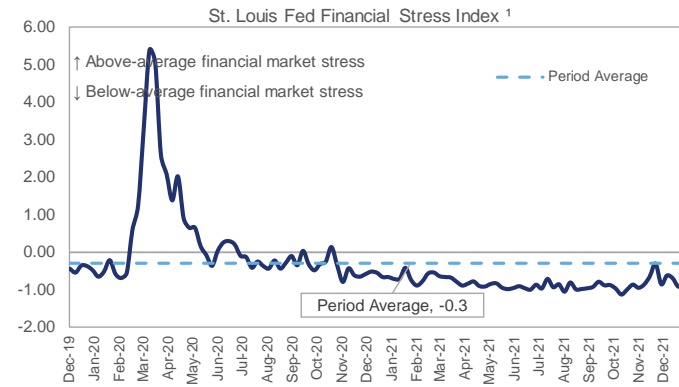
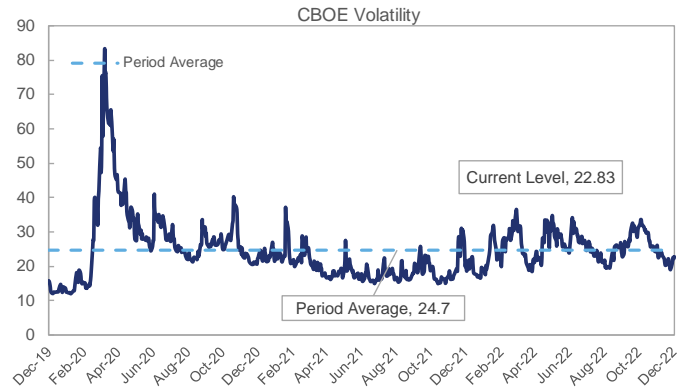
**Bloomberg Pure Factor Total Return**



Data Source: Bloomberg



## Market Conditions



Data Source: Bloomberg

## Currencies

Trade-Weighted Exchange Index - \$USD vs. Major Currencies

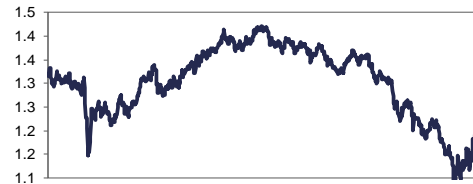


USD/EUR	USD/GBP	USD/AUD	CAD/USD	JPY/USD	SEK/USD	CHF/USD
1.0540	1.2259	0.6795	1.3645	136.5600	10.3236	0.9342

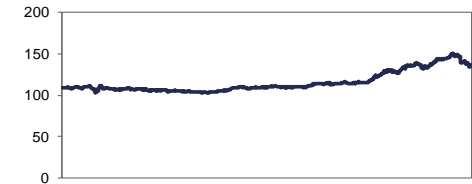
\* Spot Rates as of Friday, December 09, 2022

Data Source: Bloomberg

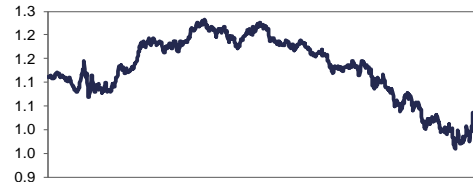
US / UK (GBP)



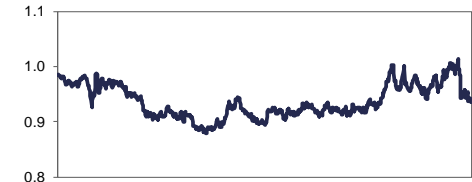
Japan / US



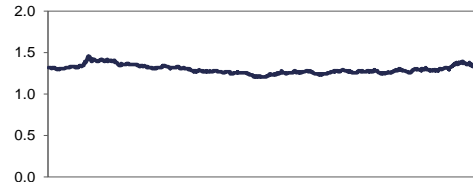
US / Euro (EUR)



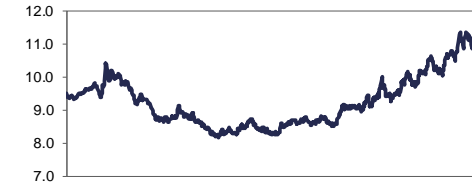
Switzerland (CHF) / US



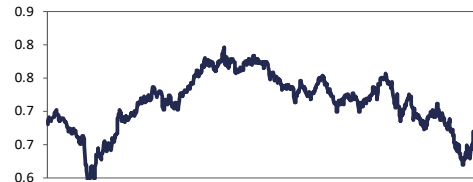
Canada (CAD) / US



Sweden (SEK) / US



US / Australia (AUD)



## Important Information

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CERS' plan accounting processing:

Within the plan accounting structure there are two primary types of accounts Plan Accounts and Pool Accounts. Plan Accounts are the owners of the investment pool. An account is established for each plan and these accounts hold Units of Participation that represent the plan's/fund's invested value of the investment pool. Pool Accounts are accounts that hold the assets of the investment pool where all investment related activity and earnings occur. These accounts are the investment strategies of the pool. Units of Participation are bought and sold as each plan/fund contributes or withdraws cash or assets from the investment pool. The investment pool earnings are then allocated to plans utilizing a cost distribution method that allows for fluctuating prices experienced in capital markets. This involves earnings allocated to the plan accounts with an increase or decrease in cost on the Unit of Participation Holdings of the Plan Accounts. Correspondingly, the price of the Unit of Participation Holdings is updated to reflect change in market value in the investment pool. Earnings are allocated based on the daily weighted average of Master Trust Units held by each plan/fund account during the monthly earnings period. This method is commonly used when plans make multiple contributions or withdrawals from the investment pool throughout the month as it eliminates allocation distortion due to large end of month cash flows.

An institutional accounting system shall support a method for determining the amount of monthly earnings are allocated to each plan account.

#### **F. Investment Consultants**

Qualified independent investment consultants may be retained by the CERS Investment Committee for asset allocation studies, asset allocation recommendations, performance reviews, manager searches, and other investment related consulting functions and duties as set forth by contract.

#### **G. Selection**

Qualified investment managers, investment consultants, and other investment related service providers shall be selected by the CERS Investment Committee in accordance with the IPS. The selection shall be based upon the demonstrated ability of the professional(s) to provide the required expertise or assistance described in the Request For Proposals (RFP) or Request For Information (RFI), if utilized. In order to create an efficient and effective process, the CERS Investment Committee or CIO may, in their sole discretion, utilize an RFI, an RFP, third party proprietary software or database, review of existing service provider capabilities, or any combination of these or other methods to select a service provider.

### **III. Asset Allocation Guidelines**

In establishing asset allocation guidelines, the CERS Board recognizes that each CERS plan has its own capacity to tolerate investment volatility, or risk. Therefore, each CERS plan has been studied and asset allocation guidelines have been established on a plan by plan basis. The CERS Board will ensure the asset allocation guidelines of each plan are reviewed annually. The CERS Board will provide the CERS Investment Committee with the results of any asset liability valuation study and guidance for determining the needs of any particular CERS plan.

This asset allocation is the result of an update to the Investment Policy enacted on January 1, 2021. The changes to the asset allocation were arrived upon after the Asset Allocation study of November 2020 and an Efficient Frontier analysis conducted in November 2021. The CERS

Board has established the following Asset Allocation Guidelines, effective November 10, 2021.

Asset Class	Target	Minimum	Maximum
Equity			
Public Equity	<b>50%</b>	35%	65%
Private Equity	<b>10%</b>	7%	13%
<b>Fixed Income</b>			
Core Fixed Income	<b>10%</b>	8%	12%
Specialty Credit*	<b>10%</b>	7%	13%
Cash	<b>0%</b>	0%	3%
<b>Inflation Protected</b>			
Real Estate	7%	5%	9%
Real Return	<b>13%</b>	9%	17%

\*includes High Yield Fixed Income

When the CERS Board makes adjustments to asset allocations, the KPPA Investment Staff will have a twelve (12) month period to adjust assets to comply with the revised CERS portfolio asset allocations, unless a longer compliance period is approved by the CERS Board. Such compliance extensions may be approved by the CERS Board due to special liquidity, market or other considerations.

The intent of the CERS Board in allocating funds to the investment managers is for the investment managers to fully invest the funds. However, the CERS Board is aware that from time to time the investment manager will require a portion of the allocated funds to be held in cash provided the cash holdings do not exceed five percent (5%) of the manager's allocation for any given quarter, unless such cash holdings are an integral part of a fixed income manager's investment strategy.

The individual CERS plan level asset allocations will be reviewed monthly by KPPA Investment Staff relative to its target asset class allocation taking into account any tactical asset allocation shift directed by the CERS Investment Committee.

Regarding individual investment manager initial allocations, KPPA Investment Staff will get approval at the CERS Investment Committee meeting for a specific dollar amount intended to be committed to a closed-end fund such as private equity or real estate funds and will get approval for a percent of the appropriate asset class target for open-end managers. For those open-end funds where assets can be added or subtracted, the CIO will have discretion to reduce or increase an investment manager's allocation between 50% and 150% of the approved target. The target will not be raised prior to the one-year anniversary of the amount approved by the CERS Investment Committee, and must be reported to the CERS Investment Committee at the next scheduled meeting. If the need arises to terminate a manager between CERS Board meetings, the CIO will have discretion to do so after receiving approval from either the CERS Board Chair or the CERS Investment Committee Chair with concurrence by the CERS CEO. The CERS Investment Committee and the CERS Board must be notified of the manager termination at the next scheduled CERS Investment Committee and Board meetings.

Short-term market shifts may cause the asset mix to drift from the allocation targets. Should the target percentage fall out of the indicated range for a particular asset class, KPPA Investment Staff shall direct rebalancing transactions to reallocate assets from the over-allocated asset class to the under-allocated asset class. Within the allowable ranges, KPPA Investment Staff should use regular cash flows to rebalance toward targets to avoid incurring additional trading costs to

correct minor deviations from asset allocation targets. Except when there is a perceived extraordinary downside risk in a particular asset class, movement outside the normal ranges should be avoided.

Investments in private assets are generally less liquid than investments in public markets securities and are typically implemented via periodic commitments to funds with limited partnership structures. As a result, actual allocations to these asset classes may deviate from their strategic targets for extended periods. Actual vs. target deviations for these asset classes shall not be considered in violation of the Asset Allocation Guidelines. However, when identified by the KPPA Investment Staff the deviation must be reported to the CERS Investment Committee Chair within ten (10) business days and at the next Quarterly CERS Investment Committee meeting and each Investment Committee meeting thereafter until the allocation is in compliance with the target. Under/overweights to these asset classes shall be invested in public markets securities with the most similar risk/return characteristics as a short-term proxy for the private asset classes.

In keeping with its responsibility as a CERS Board and wherever consistent with its fiduciary responsibility, the CERS Board encourages the investment of the fund's assets in investments, funds, and securities of corporations which provide a positive contribution to the economy of the Commonwealth of Kentucky. However, where any security is not a prohibited investment under the governing laws and policies, discretion will be granted to the appointed investment managers in the selection of such securities and timing of transactions consistent with the following guidelines and restrictions.

## **A. Equity**

### **Public Equity**

Investments may be made in common stock, securities convertible into common stock, preferred stock of publicly traded companies on stock markets, asset class relevant ETFs or any other type of security contained in a manager's benchmark. Each individual equity account shall have a comprehensive set of investment guidelines prepared by the GIO, which contains a listing of permissible investments, portfolio restrictions, and standards of performance for the account.

The KPPA Investment Staff internally manages approximately fifteen (15%) percent of US equity index funds that are intended, consistent with the governing Plan documents, to gain exposure to a broad asset sector to replicate the characteristics of the asset class, to minimize administrative expenses and to help achieve overall portfolio objectives. The KPPA Investment Staff may passively manage up to twenty (20%) percent of the overall portfolio dedicated to these efficient markets. Beyond this level the CIO shall seek the approval of the Investment Committee by explaining how further passive management would help achieve the overall portfolio objectives. These objectives can be achieved through several management techniques, including, but not limited to, portfolio optimization, non-reinvestment of index dividends, and other management techniques intended to help achieve the investment objectives of CERS.

### **Private Equity Investments**

Subject to specific approval of the CERS Investment Committee, investments may be made for the purpose of creating a diversified portfolio of alternative investments. Private equity investments are expected to achieve attractive risk-adjusted returns and, by definition, possess a higher degree of **risk** with a higher return potential than traditional investments. Accordingly, total rates of return from private equity investments are expected to be greater than those that might



## MEMORANDUM

**TO:** County Employees Retirement System Board of Trustees

**From:** Dr. Merl Hackbart, Chair  
Investment Committee

**Date:** December 21, 2022

**Subject:** Summary of Investment Committee Regular Meeting

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The County Employees Retirement System held a special meeting on December 15, 2022.

1. **The following items were approved by the Investment Committee and are being forwarded to the County Employees Retirement System Board of Trustees for ratification\***
  - a. **Changes to the Investment Policy Statement (IPS)** – The Investment Committee approved several changes/additions to the IPS.
  - b. **Changes to the Procurement Policy** – The Investment Committee approved several changes/additions to the Procurement Policy.

**RECOMMENDATION:** The Investment Committee requests the County Employees Retirement System Board of Trustees ratify the actions taken by the Investment Committee.

**\*Board of Trustees Action Required**







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This Investment Policy Statement (IPS) is issued by the CERS Board of Trustees (CERS Board or CERS Trustees) of the County Employees Retirement System (CERS) in connection with investing in the pension and insurance trust funds (Funds) of CERS.

## I. Introduction

### A. Purpose

The purpose of this IPS is to define the framework for investing the assets of CERS. This IPS is intended to provide general principles for establishing the goals of CERS, the allocation of assets, employment of outside asset management, and monitoring the results of the respective Funds.

The pension plans administered by the County Employees Retirement System (CERS) are Qualified Pension Plans under Section 401(a) of the Internal Revenue Code. Additionally, Kentucky Revised Statutes 61.701 establishes health insurance benefits to recipients of CERS. Kentucky Revised Statutes 61.702 provides that all amounts necessary to provide for insurance benefits shall be paid to the insurance fund. The CERS Board shall administer the insurance fund in the same manner as the pension funds.

### B. Philosophy

The CERS Trustees recognize their fiduciary duty not only to invest CERS funds in formal compliance with the Prudent Person Rule, but also to manage those assets in continued recognition of the basic long-term nature of CERS. The CERS Trustees interpret this to mean, in addition to the specific guidelines and restrictions set forth in the law and this document, that the assets of CERS shall be proactively managed—that is, investment decisions regarding the particular asset classes, strategies, and securities to be purchased or sold shall be the result of a long-term investment strategy. Being a long-term investor means that CERS Trustees are willing to accept a certain amount of risk in pursuit of potentially higher reward and that the Trustees can afford to be patient for a longer period of time.

The CERS Trustees recognize that asset allocation is the primary driver of long-term investment performance, and will therefore review asset allocation and asset-liability studies on a regular basis as outlined in Section III of this document. The Asset Allocation Guidelines represents a strategic decision, with the primary aim that CERS meet their performance objectives in the long-term, but understanding that this may not necessarily occur every year.

The CERS Trustees recognize that there is generally an inverse relationship between market efficiency and the ability for active management to produce excess returns. Therefore, investments in efficient markets will be made using index or index-like investments with the goal of replicating, or exceeding, index returns with low management fees and low tracking errors. Active management will be pursued in less efficient markets accepting higher tracking error and paying higher management fees with the expectation of producing excess returns over the long term. This allows the KPPA Office of Investments staff (KPPA Investment Staff) and consultant(s) to focus their efforts on identifying, selecting, and monitoring managers, as well as the overall management fees paid, in the areas of the market most likely to produce excess returns.

The CERS Trustees recognize that, commensurate with their overall objective of maximizing long-term return given the appropriate level of risk, it is necessary that proper diversification of assets be maintained both across and within the classes of securities held to minimize/mitigate overall portfolio risk. Consistent with carrying out their fiduciary responsibilities and the concept of Modern Portfolio Theory, the CERS Trustees will not systematically exclude any investments in companies, industries, countries, or geographic areas unless required to do so by statute. Within this context of proactive management and the necessity for adherence to proper diversification, the CERS Trustees rely upon appropriate professional advice from staff and service providers.

The CERS Trustees recognize the importance of responsible investing. Accordingly, the Trustees acknowledge that integrating Environment, Social, and Governance (ESG) policy principles that engages the issue from a risk, opportunity and fiduciary duty perspective will enhance investment results. The overriding consideration for the Trustees will continue to be investing to maximize the long-term returns for plan beneficiaries.

## **II. Responsibilities**

The CERS Trustees and other fiduciaries shall discharge their duties with respect to CERS: (1) solely in the interest of the participants and beneficiaries; (2) for the exclusive purpose of providing benefits to participants and beneficiaries; (3) with the care, skill and caution under the circumstances then prevailing which a prudent person acting in a like capacity and familiar with those matters would use in the conduct of an activity of like character and purpose; (4) impartially; (5) incurring and paying appropriate and reasonable expenses of administration which may not necessarily be the lowest and (6) in accordance with a good faith interpretation of the laws, regulations, and other instruments governing CERS.

Additionally, the Trustees and other fiduciaries shall not engage in any transaction which results in a substantial diversion of CERS income or assets. Every fiduciary shall provide adequate security and a reasonable rate of return to a disqualified person or in any other prohibited transaction described in Internal Revenue Code Section 503(b).

### **A. CERS Board of Trustees**

The CERS Investment Committee is created by Kentucky Revised Statutes 78.790(1)(b) and the CERS Board as set forth in the CERS Board's Statement of Bylaws and Committee Organization (Section 2.2(e)). The Chair authorizes and directs the appointment of a CERS Investment Committee with full power to act for the CERS Board in the acquisition, sale and management of the securities and funds of CERS in accordance with the provisions of any applicable statutes, and policies of the CERS Board. The CERS Investment Committee has the power to act on behalf of the CERS Board on all investment related matters, including the acquisition, sale, safeguarding, monitoring and management of the assets, securities and funds of CERS. The CERS Board shall require a vote of six (6) Trustees to ratify the actions of the CERS Investment Committee at the CERS Board meeting following the CERS Investment Committee meeting where such action was taken.

**B. CERS Investment Committee**

The CERS Board of Trustees shall establish an investment committee as required by KRS 78.790(b). The CERS Investment Committee shall consist of five members of the CERS Board and shall be specifically composed as follows: The three (3) members with investment experience appointed by the Governor under KRS 78.782(1)(b); one (1) elected member to be appointed by the CERS Board Chair; and one (1) member appointed by the Governor under KRS 78.782(1)(b) with retirement experience, to be appointed by the CERS Board Chair. The CERS Investment Committee has the authority to implement the investment policies adopted by the CERS Board and to act on behalf of the CERS Board on all investment related matters.

The CERS Investment Committee has the following oversight responsibilities:

1. Assure compliance with this IPS and all applicable laws and regulations.
2. Approve the selection and termination of service providers. If the need arises to terminate a manager between CERS Board meetings, the KPPA Executive Director, Office of Investments (CIO) will have discretion to do so after receiving approval from either the CERS Board Chair or the CERS Investment Committee Chair, with concurrence by the CERS CEO. The CERS Investment Committee and the CERS Board must be notified of the manager termination at the next scheduled CERS Investment Committee and CERS Board meetings.
3. Meet no less than quarterly to evaluate whether this IPS, the investment activities and management controls and processes continue to be consistent in meeting CERS goals. Mandate actions necessary to maintain the overall effectiveness of the investment program.
4. Review assessment of investment program management processes and procedures, and this IPS relative to meeting stated goals.

**C. KPPA Investment Staff**

The CIO is responsible for the administration of investment assets of CERS consistent with the policies, guidelines and limits established by the federal and state laws, the CERS Board, and the CERS Investment Committee.

The CIO receives direction from and reports to the KPPA Executive Director. The CIO shall provide information to the CERS Investment Committee on all investment matters, including but not limited to the following:

- i. Maintaining the diversification and risk exposure of the Funds consistent with policies and guidelines.
- ii. Assessing and reporting on the performance and risk exposure of the overall investment program relative to goals, objectives, policies and guidelines.
- iii. Monitoring and assessing service providers to assure that they meet expectations and conform to policies and guidelines.
- iv. Recommending changes to service providers, statutes, policies or guidelines as needed to maintain a productive relationship between the investment program and its goals; and acting as liaison on all investment related matters.
- v. Identifying issues for consideration by the CERS Investment Committee and preparing recommendations or reports regarding such matters.
- vi. Preparing a memo for the CERS Investment Committee for each proposed investment which shall cover the pertinent details of the investment, which should include, but not be limited to: the amount of the investment, type of investment, purpose, opportunity/goal,

- risks, volatility assumptions, liquidity, structure, fees, background of investment firm with reasons for selection, list of other firms considered, which CERS funds will invest, and the specific reasons, if any, why a CERS fund may be excluded from the investment.
- vii. Engaging in a monthly meeting with the CERS Investment Committee Chair and the CERS CEO to discuss market trends and all things relevant to the CERS plan positioning.

The CIO or designee is authorized to execute trades on fixed income and equity securities (including exchange-traded funds (ETFs) and to execute proxies for the CERS Board consistent with this IPS.

To carry out this IPS and any investment related decisions of the CERS Board, the CERS Chief Executive Officer (CEO), or the CIO or designee are authorized to execute agreements and other necessary or proper documents pertaining to investment managers, consultants, investment related transactions, or other investment functions. All investment decisions of the CEO and/or the CIO not addressed in this IPS will be ratified by the Investment Committee and the Board of CERS.

#### D. Investment Managers

In instances where the CERS Investment Committee, in consultation with the CIO, has determined it is desirable to employ the services of an external Investment Manager, the following shall be applicable:

- i. Investment Managers shall be qualified and agree to serve as a fiduciary to CERS and should be of institutional quality as deemed by KPPA Investment Staff in collaboration with the investment consultant(s).
- ii. Notwithstanding the CIO responsibilities when ~~selecting a new investment, when the KPPA Investment Staff seeks to retain a new external Investment Manager, whenever feasible the Investment Committee shall interview the top three candidates identified and considered by KPPA Investment Staff and the Investment Committee will participate in the selection of the Investment Manager.~~ the KPPA Investment Staff seeks a new external Investment Manager, the CIO will provide the Investment Committee with a candidate pool of up to three (3) Investment Managers who have met the screening and due diligence criteria. The Investment Committee will determine whether interviews with any potential Investment Manager(s) is required prior to the Investment Committee selecting the new Investment Manager.
- iii. Investment Managers shall manage assets in accordance with this IPS and any additional guidelines established by contract, as may be modified in writing from time to time.
- iv. Total assets assigned to the selected manager shall not exceed 25% of that firm's total assets under management and shall not exceed 25% of a firm's total assets under management in a commingled product. Separate accounts or funds of one are not included in this 25% limitation for commingled products.
- v. The assets managed by any one active or passive investment manager shall not exceed 15% of the overall assets in the pension and insurance funds.
- vi. All investment management services will be contracted according to the CERS Investment Procurement Policy established by the CERS Board.

#### E. Custody Bank

KPPA shall hire custodians and other agents who will be fiduciaries to CERS and who will assume responsibility for the safekeeping and accounting of all assets held on behalf of CERS and other duties as agreed to by contract.

A portfolio accounting system process shall be implemented that includes plan accounting and unitization methods. An investment related service provider(s) may be selected to execute the process in accordance with the Boards' selection process. The following is a brief description of CERS' plan accounting processing:

Within the plan accounting structure there are two primary types of accounts Plan Accounts and Pool Accounts. Plan Accounts are the owners of the investment pool. An account is established for each plan and these accounts hold Units of Participation that represent the plan's/fund's invested value of the investment pool. Pool Accounts are accounts that hold the assets of the investment pool where all investment related activity and earnings occur. These accounts are the investment strategies of the pool. Units of Participation are bought and sold as each plan/fund contributes or withdraws cash or assets from the investment pool. The investment pool earnings are then allocated to plans utilizing a cost distribution method that allows for fluctuating prices experienced in capital markets. This involves earnings allocated to the plan accounts with an increase or decrease in cost on the Unit of Participation Holdings of the Plan Accounts. Correspondingly, the price of the Unit of Participation Holdings is updated to reflect change in market value in the investment pool. Earnings are allocated based on the daily weighted average of Master Trust Units held by each plan/fund account during the monthly earnings period. This method is commonly used when plans make multiple contributions or withdrawals from the investment pool throughout the month as it eliminates allocation distortion due to large end of month cash flows.

An institutional accounting system shall support a method for determining the amount of monthly earnings are allocated to each plan account.

#### **F. Investment Consultants**

Qualified independent investment consultants may be retained by the CERS Investment Committee for asset allocation studies, asset allocation recommendations, performance reviews, manager searches, and other investment related consulting functions and duties as set forth by contract.

#### **G. Selection**

Qualified investment managers, investment consultants, and other investment related service providers shall be selected by the CERS Investment Committee in accordance with the IPS. The selection shall be based upon the demonstrated ability of the professional(s) to provide the required expertise or assistance described in the Request For Proposals (RFP) or Request For Information (RFI), if utilized. In order to create an efficient and effective process, the CERS Investment Committee or CIO may, in their sole discretion, utilize an RFI, an RFP, third party proprietary software or database, review of existing service provider capabilities, or any combination of these or other methods to select a service provider.

### **III. Asset Allocation Guidelines**

In establishing asset allocation guidelines, the CERS Board recognizes that each CERS plan has its own capacity to tolerate investment volatility, or risk. Therefore, each CERS plan has been studied and asset allocation guidelines have been established on a plan by plan basis. The CERS Board will ensure the asset allocation guidelines of each plan are reviewed annually. The CERS Board will provide the CERS Investment Committee with the results of any asset liability valuation study and guidance for determining the needs of any particular CERS plan.

This asset allocation is the result of an update to the Investment Policy enacted on January 1, 2021. The changes to the asset allocation were arrived upon after the Asset Allocation study of November 2020 and an Efficient Frontier analysis conducted in November 2021. The CERS Board has established the following Asset Allocation Guidelines, effective November 10, 2021.

Asset Class	Target	Minimum	Maximum
Equity			
Public Equity	50%	35%	65%
Private Equity	10%	7%	13%
<b>Fixed Income</b>			
Core Fixed Income	10%	8%	12%
Specialty Credit*	10%	7%	13%
Cash	0%	0%	3%
<b>Inflation Protected</b>			
Real Estate	7%	5%	9%
Real Return	13%	9%	17%

\*includes High Yield Fixed Income

[When the CERS Board makes adjustments to asset allocations, the KPPA Investment Staff will have a twelve \(12\) month period to adjust assets to comply with the revised CERS portfolio asset allocations, unless a longer compliance period is approved by the CERS Board. Such compliance extensions may be approved by the CERS Board due to special liquidity, market or other considerations.](#)

The intent of the CERS Board in allocating funds to the investment managers is for the investment managers to fully invest the funds. However, the CERS Board is aware that from time to time the investment manager will require a portion of the allocated funds to be held in cash provided the cash holdings do not exceed five percent (5%) of the manager's allocation for any given quarter, unless such cash holdings are an integral part of a fixed income manager's investment strategy.

The individual CERS plan level asset allocations will be reviewed monthly by KPPA Investment Staff relative to its target asset class allocation taking into account any tactical asset allocation shift directed by the CERS Investment Committee.

Regarding individual investment manager initial allocations, KPPA Investment Staff will get approval at the CERS Investment Committee meeting for a specific dollar amount intended to be committed to a closed-end fund such as private equity or real estate funds and will get approval for a percent of the appropriate asset class target for open-end managers. For those open-end funds where assets can be added or subtracted, the CIO will have discretion to reduce or increase an investment manager's allocation between 50% and 150% of the approved target. The target will not be raised prior to the one-year anniversary of the amount approved by the CERS Investment Committee, and must be reported to the CERS Investment Committee at the next scheduled meeting. If the need arises to terminate a manager between CERS Board meetings, the CIO will have discretion to do so after receiving approval from either the CERS Board Chair or the CERS Investment Committee Chair with concurrence by the CERS CEO. The CERS Investment Committee and the CERS Board must be notified of the manager termination at the next scheduled CERS Investment Committee and Board meetings.

Short-term market shifts may cause the asset mix to drift from the allocation targets. Should the target percentage fall out of the indicated range for a particular asset class, KPPA Investment

Staff shall direct rebalancing transactions to reallocate assets from the over-allocated asset class to the under-allocated asset class. Within the allowable ranges, KPPA Investment Staff should use regular cash flows to rebalance toward targets to avoid incurring additional trading costs to correct minor deviations from asset allocation targets. Except when there is a perceived extraordinary downside risk in a particular asset class, movement outside the normal ranges should be avoided.

Investments in private assets are generally less liquid than investments in public markets securities and are typically implemented via periodic commitments to funds with limited partnership structures. As a result, actual allocations to these asset classes may deviate from their strategic targets for extended periods. Actual vs. target deviations for these asset classes shall not be considered in violation of the Asset Allocation Guidelines. However, when identified by the KPPA Investment Staff the deviation must be reported to the CERS Investment Committee Chair within ten (10) business days and at the next Quarterly CERS Investment Committee meeting and each Investment Committee meeting thereafter until the allocation is in compliance with the target. Under/overweights to these asset classes shall be invested in public markets securities with the most similar risk/return characteristics as a short-term proxy for the private asset classes.

In keeping with its responsibility as a CERS Board and wherever consistent with its fiduciary responsibility, the CERS Board encourages the investment of the fund's assets in investments, funds, and securities of corporations which provide a positive contribution to the economy of the Commonwealth of Kentucky. However, where any security is not a prohibited investment under the governing laws and policies, discretion will be granted to the appointed investment managers in the selection of such securities and timing of transactions consistent with the following guidelines and restrictions.

#### **A. Equity**

##### **Public Equity**

Investments may be made in common stock, securities convertible into common stock, preferred stock of publicly traded companies on stock markets, asset class relevant ETFs or any other type of security contained in a manager's benchmark. Each individual equity account shall have a comprehensive set of investment guidelines prepared by the GIO, which contains a listing of permissible investments, portfolio restrictions, and standards of performance for the account.

The KPPA Investment Staff internally manages approximately fifteen (15%) percent of US equity index funds that are intended, consistent with the governing Plan documents, to gain exposure to a broad asset sector to replicate the characteristics of the asset class, to minimize administrative expenses and to help achieve overall portfolio objectives. The KPPA Investment Staff may passively manage up to twenty (20%) percent of the overall portfolio dedicated to these efficient markets. Beyond this level the CIO shall seek the approval of the Investment Committee by explaining how further passive management would help achieve the overall portfolio objectives. These objectives can be achieved through several management techniques, including, but not limited to, portfolio optimization, non-reinvestment of index dividends, and other management techniques intended to help achieve the investment objectives of CERS.

##### **Private Equity Investments**

Subject to specific approval of the CERS Investment Committee, investments may be made for the purpose of creating a diversified portfolio of alternative investments. Private equity

investments are expected to achieve attractive risk-adjusted returns and, by definition, possess a higher degree of **risk** with a higher return potential than traditional investments. Accordingly, total rates of return from private equity investments are expected to be greater than those that might be obtained from conventional public equity or debt investments. Examples of such investments include, but are not limited to: private investments into venture capital; leveraged buyouts; special situations; distressed debt; private debt; timberland, oil and gas partnerships; infrastructure; commodities; and private placements. While it is expected that the majority of these assets will be invested within the United States, a portion has been allocated to non-US investments. These non-U.S. investments are not restricted by geography.

The private equity market is highly sophisticated and specialized with respect to variety and types of investment structures. There exists major competition for deal flow on the part of both investor and general partners. To a great extent, market forces drive the bargaining of economic terms. Most investment vehicles are structured as commingled vehicles and often blind pool investment partnerships. The most common offering forms are equity private placements where the governing laws of the partnership impose a passive role of the limited partner investor. These contractual arrangements are long-term in nature and provide the general partner or sponsors a reasonable time horizon to wisely invest capital, add value through intensive operational management, then realize the proceeds of such an investment. Moreover, terms of the partnership are proposed by the general partner and are critical to the economic incentives and ultimate net performance of the partnership.

#### **Investment Strategy and Plan Guidelines**

To strengthen the diversification of the investments, several guidelines will be utilized in KPPA Investment Staffs formulation and recommended annual investment strategy and plan for private equity investments. These guidelines encompass annual commitment levels to the asset class, types of investment vehicles that can be utilized, controlling financing stage risks, industry, manager and geography concentration/diversification limits, acceptable contract negotiations, appropriate sizes for investments, and the preferred alignment of interests.

Investment Vehicles: CERS plans will gain exposure to private equity investments by hiring external investment managers either directly or through participation in secondary private equity markets. Typically, CERS plans will subscribe as a Limited Partner (LP) to limited partnership vehicles sponsored by such specialty external investment managers. CERS will also at times structure separately managed accounts with specific investment objectives to be implemented by external investment managers. CERS plans may also gain private equity exposure by utilizing the following vehicles: limited liability companies and co-investments alongside CERS existing or potential limited partnerships.

Investment Timing Risks: KPPA Investment Staff should limit the potential for any one investment to negatively impact the long-term results of the portfolio by investing across business cycles. Moreover, the portfolio must gain exposure to the array of financing stages by opportunistically exploiting the best investments at different stages of the business cycle. KPPA Investment Staff may also consider purchasing secondary partnership interests to shorten the effective life of the partnership interest and therefore positively impacting the current and long-term net return of the portfolio. Should KPPA Investment Staff anticipate the need of entering a secondary partnership such agreement would need the approval of CERS Investment Committee and ratification by the CERS Board. In addition, mindful of vintage year diversification, CERS should seek to identify attractive commitments annually, further ensuring the portfolio invests across business cycles.



General Partner Diversification: KPPA Investment Staff will seek to work with a variety of general partners due to their specialized expertise in particular segments of the private equity market and source of their deal flow. No more than fifteen (15) percent of CERS Pension or Insurance total allocation to private equity investments may be committed to any one partnership.

Total Exposure to Private Equity: Given the illiquid nature of the asset and the complexity of each private equity transaction, it is important that the CIO actively manage the maximum amount of CERS Plan assets allocated to this asset class. The asset allocation authorizes a maximum of thirteen (13%) percent of total CERS Plan assets to this asset class. Should circumstances arise and the allocation go beyond the maximum allocation, the CIO will inform the Investment Committee Chair as soon as possible and report to the Investment Committee Chair and the CEO at the next monthly strategic planning meeting and all subsequent quarterly CERS Investment Committee meetings until the allocation is back in compliance.

## **B. Fixed Income**

### **Core Fixed Income**

The core fixed income accounts may include, but are not limited to the following fixed income securities: U.S. Government and Agency bonds; investment grade U.S. corporate credit; investment grade non-U.S. corporate credit; municipal bonds; Non-U.S. sovereign debt; mortgages including residential mortgage backed securities; commercial mortgage backed securities; and whole loans, asset-backed securities, and asset class relevant ETFs.

The high yield fixed income accounts may include, but are not limited to, the following fixed income securities: non-investment grade U.S. corporate credit including both bonds and bank loans; non-investment grade non-U.S. corporate credit including bonds and bank loans; municipal bonds; non-U.S. sovereign debt; mortgages including residential mortgage backed securities, commercial mortgage backed securities, and whole loans, asset-backed securities; and emerging market debt (EMO) including both sovereign EMD and corporate EMD and asset class relevant ETFs.

Each individual core fixed income account shall have a comprehensive set of investment guidelines prepared by the CIO which contains a listing of permissible investments, portfolio restrictions, risk parameters, and standards of performance for the account.

### **Specialty Credit**

Each individual Specialty Credit account shall have a comprehensive set of investment guidelines prepared by the CIO which contains a listing of permissible investments, portfolio restrictions, risk parameters, and standards of performance for the account.

### **Cash Equivalent Securities**

Selection of particular short-term instruments, whether viewed as liquidity reserves or as investment vehicles, should be determined primarily by the safety and liquidity of the investment and only secondarily by the available yield. The following short-term investment vehicles are considered acceptable: Publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages, municipal bonds, and collective short-term investment funds (STIFs), money market funds or instruments (including, but not limited to, certificates of deposit, bank notes, deposit notes, bankers' acceptances and commercial paper) and repurchase agreements relating to the above instruments. Instruments may be selected from among those having an investment grade rating at the time of purchase by at least one recognized bond rating service. In cases where the instrument has a split rating, the lower of the two ratings shall prevail. All instruments shall have a

maturity at the time of purchase that does not exceed 397 days. Repurchase agreements shall be deemed to have a maturity equal to the period remaining until the date on which the repurchase of the underlying securities is scheduled to occur. Variable rate securities shall be deemed to have a maturity equal to the time left until the next interest rate reset occurs, but in no case will any security have a stated final maturity of more than three years.

CERS fixed income managers that utilize cash equivalent securities as an integral part of their investment strategy are exempt from the permissible investments contained in the preceding paragraph. Permissible short-term investments for fixed income managers shall be included in the investment manager's investment guidelines.

### **C. Inflation Protected**

#### **Real Estate**

Investments are made in equity and debt real estate for the purpose of achieving the highest total rate of return possible consistent with a prudent level of risk. Allowable real estate investments include open-end and closed-end commingled real estate funds, joint venture investments, public and private real estate investment trusts (REITs), public real estate operating companies, and real estate related debt. CERS has determined that the primary role of the real estate asset class is to provide for the following:

- Attractive risk adjusted returns through active management and ability to access managers with the expertise and capabilities to exploit market inefficiencies in the asset class. The illiquid nature of real estate investments combined with the complexity of investments makes it difficult for casual investors to effectively access the asset class effectively. It is our belief that through active management and by investing in top tier managers with interests aligned through co-investment and incentive-based compensation, CERS can maximize their risk adjusted returns. This active management approach will be pursued.
- Diversification benefits through low correlations with other asset classes, primarily the U.S. equity markets.
- Provide a hedge against unanticipated inflation, which real estate has historically provided due to lease structures and the increases in material and labor costs during inflationary periods.
- Permit CERS to invest in unique opportunities that arise due to dislocations in markets that occur from time to time.

#### **Real Return**

The purpose of the Real Return Portfolio is to identify strategies that provide both favorable stand-alone risk-adjusted returns as well as the benefit of hedging inflation for the broader plans. Real Return strategies are not necessarily a separate asset class but may include real assets, such as infrastructure, real estate, commodities, and natural resources among others, as well as financial assets that have a positive correlation to inflation. This can include real bonds such as Treasury Inflation-Protected Securities (TIPs) (and other inflation linkers) or real stocks such as REITs, Master Limited Partnerships (MLPs), and oil & gas stocks. Additionally, Real Return managers may attempt to add value by tactically allocating to various asset classes according to how each asset class performs across an economic cycle and the manager's perception of where we are in

the cycle. The goal is to invest in inflation sensitive assets during inflationary periods, and avoid those assets in deflationary periods, thus providing a positive real return across the cycle.

The real return opportunity set may include numerous vehicles to access a wide variety of investment styles and strategies. These investment vehicles may include mutual funds, ETFs, separately managed accounts as well as hedge funds (open-end limited partnerships) and private equity (close-end limited partnerships). The list of strategies that CERS' Real Return Portfolio may use includes, but is not limited to, the following:

- Global Tactical Asset Allocation (GTAA)/Global Macro: GTAA or macro strategies are those that make directional bets on major markets or asset classes instead of individual securities. GTAA and macro strategies typically invest in all major assets classes including equity markets, credit and debt instruments, currencies/interest rates, and commodities. These strategies tend to focus on economic factors that would suggest an opportune time to invest in a given asset class, and will change their allocations actively over time. These strategies may use inflation as the economic factor to gain exposure to and will target a real rate of return over time.
- Inflation Linked Securities are securities that directly tie coupon payments or principal increases to an inflation index, such as Consumer Price Index (CPI). These strategies could include not only US TIPS, but also global sovereign inflation linked bonds, corporate or infrastructure inflation linked bonds, and possibly short duration floating rate bonds.
- Inflation Sensitive Equities include publicly traded equity and equity related securities in companies which have a high sensitivity to inflation in their profit margins via the nature of their operating assets, such as energy companies, basic materials and miners, natural resource stocks, and listed infrastructure. This category can also include, but are not limited to, REITs, MLPs as well as ETFs and index products on REITS, MLPs, and natural resource stocks.
- Commodities: Commodities are the raw materials that are physical inputs into the production process. Managers that invest in liquid commodity strategies using exchange traded futures can span from simple indexing (matching a long-only commodities index), to enhanced indexing or active long (selecting positions that vary from the index but within fairly tight ranges), as well as unconstrained long-short managers.

Private Property: For the purposes of this IPS, private property refers to the ownership of an idiosyncratic, physical asset that is predominately fixed and/or permanent or at least substantially long-lived. This includes real estate, such as land and any improvements to or on the land, as well as timberland and farmland. Timberland investing involves the institutional ownership of forest for the purpose of growing and harvesting the timber. The timber may be used for furniture, housing lumber, flooring, pulp for paper, woodchips, and charcoal, among other things. Farmland investing entails ownership of land used primarily, if not exclusively, for agricultural production both for crops, including row crops and permanent crops, as well as livestock. Private property can also include infrastructure investing, which refers to financing the manufacture or development of the underlying fundamental assets and basic core infrastructure that are necessary for an economy whereby such assets are largely fixed and long-lived. These tend to be high cost, capital-intensive investments that are vital to a society's prosperity and facilitate the transfer, distribution, or production of basic goods and services.

- Natural Resources: Natural resources can include investing in the financing, development,

extraction, and production of minerals, basic materials, petroleum products, and water as well as renewable resources such as agricultural commodities and solar energy. As opposed to property, the returns generated in these investment strategies come more from the actual production of the resource itself. Further, these are depleting and/or consumable assets that are also portable and fungible and which in the aggregate comprise a majority of the inputs into most measurements of inflation.

- Private Assets: Private assets can include tangible or intangible assets that are not easily sold in the regular course of a business' operations for cash, and which are held for their role in contributing directly to the business' ability to generate profit. As the useful life of the asset tends to extend across many years and the assets tend to be capital intensive as well, they have some similarity to private infrastructure. Further, given that the assets contribute directly to the production process as well as often retaining intrinsic value, there is a fundamental link to inflation somewhat similar to natural resources.
- Other (Opportunistic Inflation Hedge): Other/opportunistic strategies include those that have a propensity to provide a positive real return or positive correlation with inflation over time. Liquid strategies such as inflation swaps, diversified inflation hedging mutual funds, or nominal bonds backed by inflation sensitive assets may be included in this allocation, while other illiquid strategies that may provide the same real profile can include private equity in inflation sensitive companies, hard asset-backed private credit, and structured inflation-linked products among others.

#### **Portfolio Guidelines**

No more than 50% of the total net assets of the Real Return portfolio may be invested in any one registered investment vehicle, mutual fund, or separately managed account.

No more than 20% of the total net assets of the Real Return portfolio may be invested in any single closed-end or open-end limited partnership or other unregistered investment vehicle.

The relative allocations to the liquid and illiquid portfolios will be determined according to each individual System's liquidity needs, funding status, and allocation targets on an investment by investment basis.

#### **D. Co-Investment Policy**

The CIO has discretion to make direct co-investments in companies alongside of current general partners. Any co-investment opportunity must also be part of the main account or fund into which CERS has already invested before it can be considered. For purposes of this IPS, a direct co-investment is defined as a direct investment in a portfolio company alongside an existing CERS' partnership deemed in good standing.

The maximum investment in any co-investment vehicle shall not exceed 50 percent of the total capital committed by all partners at the time of the final closing. The maximum investment in any single direct co-investment shall not exceed 20 percent of the original partnership commitment. Total investment in direct co-investments shall not exceed 20 percent of the asset class portfolio on a cost basis at the time of investment.

#### **IV. Monitoring**

Performance Measurement

CERS overall fund performance is measured relative to CERS Pension or Insurance Total Fund Benchmark. The benchmark is calculated by means of a weighted average methodology. This method is consistent with the CFA Institute Global Investment Performance Standards (GIPS®), a set of standardized, industry-wide ethical principles that guide investment managers and asset owners on how to fairly calculate and present their investment results, with the goal of promoting performance transparency and comparability. It is the product of the various component weights (i.e., asset classes' percentages) by their respective performance (returns). Due to market fluctuations and acceptable divergence, the asset classes' weights (percentages) are often not equivalent to the benchmark's weights. Therefore, the performance may indicate that the Funds have outperformed (underperformed) relative to their respective benchmarks, even when the preponderance of lesser weighted categories have underperformed (outperformed) their indices.

CERS measures its asset classes, sub-asset classes, sectors, strategies, portfolios, and instruments (investment) performance with indices that are recognized and published. These indices are determined to be appropriate measures of investments and composites of investments with identical or similar investments profiles, characteristics, and strategies. The benchmarks and indexes are intended to be objective, investable, replicable, representative and measurable of the investment mandate and, developed from publicly available information that is acceptable to CERS and the investment manager/advisor as the neutral position consistent with the underlying investor status. The CERS investment consultant and KPPA Investment staff recommend the benchmarks and indexes. These measures shall be subject to the review and approval of the CERS Investment Committee with ratification by the CERS Board when asset allocation studies are performed, or when a change to existing benchmarks is recommended by KPPA Investment Staff and the CERS investment consultant. The current asset class benchmarks, effective as of November 10, 2021 with the adoption of the asset allocation, are as follows:

Asset Class	Benchmark
<b>Equity</b>	
Public Equity	MSCI ACWI (\$N)
Private Equity	Russell 3000 + 300 bps (lagged)
<b>Fixed Income</b>	
Core Fixed Income	Bloomberg Barclays US Aggregate
Specialty Credit	50% Bloomberg Barclays US High Yield/ 50% S&P LSTA Leveraged Loan
Cash	Citi Grp 3-mos Treasury Bill
<b>Inflation Protected</b>	
Real Estate	NCREIF ODCE
Real Return	US CPI+ 3%

The following descriptions represent general standards of measurement that will be used as guidelines for the various classes of investments and managers of CERS. They are to be computed and expressed on a time-weighted total return basis:

Total Public Asset Class Allocations

Short-term

- For periods less than five years or a full market cycle, the Asset Class Allocation should exceed the returns of the appropriate Index.

Intermediate & Long-term

- For periods greater than five years or a full market cycle, the Asset Class

Allocation should exceed the appropriate Index, compare favorably on a risk-adjusted basis, and generate returns that rank above the median return of a relevant peer group. Volatility, as measured by the standard deviation of monthly returns, should be comparable to the Index.

Individual Public Security Portfolios: Individual portfolios shall be assigned a market goal or benchmark that is representative of the style or market capitalization of the assignment. Individual accounts should be monitored using the following Standards:

Short-term

- For periods less than five years or a full market cycle, individual portfolios should exceed the returns of their market goal or benchmark.

Intermediate & Long-term

- For periods greater than five years or a full market cycle, individual portfolios should exceed the return of their market goal or benchmark, compare favorably on a risk-adjusted basis, and generate returns that rank above the median return of a relevant peer group. Volatility, as measured by the standard deviation of monthly returns, should be comparable to the benchmark.

**Alternative Assets:**

**Private Equity**

The Private Equity portfolio should also seek to achieve both short-term and intermediate/long term Net Internal Rate of Returns (IRR) that provide yields in excess of core equity investments. The KPPA Investment Staff shall quarterly complete a comparison of performance between equity portfolio performance and Private Equity portfolio returns. The KPPA Investment Staff will report to the Investment Committee the following:

Short-term

- Alternative investments should earn a Net Internal Rate of Return (IRR) that place the investment above the median Net IRR of other similar funds, of the same vintage year, as reported by industry benchmarks.

Intermediate & Long-term

- The private equity portfolio should earn a return that meets or exceeds CERS Private Equity Index. Individual private equity investments should earn a Net IRR above the median Net IRR of other similar funds, of the same vintage year, as reported by industry benchmarks.

### **Inflation Protected**

#### **Real Estate**

Private Real Estate investments are unique and can be illiquid and long term in nature. Given that this may lead to large short-term performance discrepancies versus public benchmarks, CERS more appropriately measures its real estate investments based on both relative return and absolute return methodologies:

**Relative Return:** The Real Estate portfolio is expected to generate returns, net of all fees and expenses, in excess of the National Council of Real Estate Investment Fiduciaries Open End Diversified Core Equity Index (NCREIF ODCE) lagged 1 calendar quarter.

**Absolute Return:** The long-term real return objective (returns adjusted for inflation) for CERS' Real Estate portfolio is five percent (5%) over the Barclays Capital U.S. 7-10 Year Treasury Bond Index, net of investment management fees. This return shall be calculated on a time-weighted basis using industry standard reporting methodologies.

#### **Real Return**

The total Real Return investments shall seek to:

1. Short-term benchmark: For periods less than five (5) years or a full market cycle, the allocation should achieve an annual rate of return that exceeds the appropriate benchmark (the weighted average return of the underlying investment benchmarks) annually over a complete market cycle, net of all investment management fees.
2. Strategic objective: For periods greater than five (5) years or a full market cycle, the allocation should not only outperform the short-term benchmark, but also achieve a rate of return that exceeds (CPI + 300 basis points) as well.
3. Achieve a positive risk/reward trade-off when compared to similar style Real Return Investment Managers.

### **Performance Review**

On a timely basis, but not less than quarterly, the CERS Investment Committee will review the performance of the portfolio for determination of compliance with this IPS. This will include a quarterly performance peer review analysis comparing CERS with other public pension plans. On an annual basis, a comprehensive review of each asset class and underlying portfolios shall be conducted by the KPPA Investment staff and presented to the CERS Investment Committee. The review shall consist of an organizational, performance and compliance assessment.

The Compliance Officer shall perform tests at least monthly to assure compliance with the restrictions imposed by this IPS. These tests shall be performed at the asset class and total fund level. Quarterly, the Compliance Officer shall prepare a report to the CERS Investment Committee detailing the restrictions tested, exceptions, the cause of the exception and the subsequent resolution. The CERS Investment Committee shall report the findings to the CERS Board at the next regularly scheduled meeting. Internal Audit will schedule periodic reviews/audits of this function to ensure compliance with this IPS.

The following restrictions shall be tested at least monthly:

1. The amount of stock in the domestic or international equity allocation in any single corporation shall not exceed 5% of the aggregate market value of CERS' assets.
2. The amount of stock held in the domestic or international equity allocation shall not exceed 3% of the outstanding shares of any single corporation.
3. Investment in frontier markets (those countries not included in the MSCI EM Index) shall not exceed 5% of CERS' international equity assets.
4. The duration of the core fixed income portfolios combined shall not vary from that of CERS' Fixed Income Index by more than +/- 25% duration as measured by effective duration, modified duration, or dollar duration except when the CERS Investment Committee has determined a target duration to be used for an interim basis.
5. The amount invested in the debt of a single issuer shall not exceed 5% of the total market value of CERS' fixed income assets, with the exception of U.S. Government issued, guaranteed or agency obligations (or securities collateralized by same), and derivative securities used for exposure, cost efficiency, or risk management purposes in compliance with Section VII of this policy.
6. 50% of the core fixed income assets must have stated liquidity that is trade date plus three days or better.

[Any test of the restrictions set forth in this IPS that results in an exception with a fair market value of less than ten thousand dollars for a single position and less than one-hundred thousand dollars in aggregate will be classified as de minimis. These exceptions shall be documented by the Compliance Officer but will be excluded from the report prepared by the Compliance Officer and presented to the Investment Committee.](#)

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The CIO shall develop a comprehensive set of investment guidelines for each externally managed account. These guidelines should ensure, at the total fund and asset class level, that the restrictions set forth above are preserved.

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Under the CIO's direction, KPPA Investment Staff shall perform site visits with all current CERS investment managers over 3-year rolling market cycles, with at least 1/3 of all current managers occurring on a yearly basis.

#### V Additional Items

##### **Derivatives Permitted Use:**

CERS permits external managers and KPPA Investment Staff to invest in derivative securities, or strategies which make use of derivative investments, for exposure, cost efficiency and risk management purposes, if such investments do not cause the portfolio to be leveraged beyond a 100% invested position. Any derivative security shall be sufficiently liquid that it can be expected to be sold at, or near, its most recently quoted market price. Typical uses of derivatives in the portfolio are broadly defined below:

##### **Exposure:**

Derivatives are an effective way for a portfolio manager to gain exposure to a security that the manager does not want to purchase in the cash market. Reasons for gaining exposure to a security through the use of derivatives may include cheaper transactions costs, liquidity/lack of supply in the underlying market, and the flexibility to implement investment views with minimum portfolio disruption. An example is a cash equitization program.



**Cost Efficiency:**

Derivatives are often used due to the cost efficiency associated with the contract properties. Given the fact that derivatives can be used as a form of insurance, upfront trading costs must be sufficiently low for investors to purchase the contract and insure their portfolios efficiently. Furthermore, due to properties associated with derivatives and cash outlay characteristics (minimal cash outlay at inception of the contract) derivatives are generally a vehicle of gaining cost efficient exposure. An example is the cost (zero) to purchase a futures contract.

**Risk Management:**

Derivatives can be used for mitigating risk in the portfolio. When used as a risk management tool, derivatives can significantly reduce an identified financial risk or involuntary risk from investment areas by providing changes in fair values or cash flows that substantially offset the changes in fair values or cash flows of the associated item being hedged. An example is the use of currency forwards to offset periods of dollar strength when international equity markets increase in value, thereby protecting foreign asset gains in the portfolio.

**Derivatives Restricted Use:**

**Settlement:**

Investments in futures contracts are to be cash settled unless physically settled and stored by external managers. At no time shall CERS plans agree to take physical delivery on a futures contract.

**Position Limits:**

Futures and options positions entered into by CERS, or on its behalf, will comply with all position and aggregate limits established by the local governing authorities within each jurisdiction.

**Over-the-Counter (OTC):**

Investments in securities not traded on public exchanges that are deemed OTC in nature are allowed provided that a counterparty risk monitoring component is delineated in the manager's guideline section of the manager's contract. All counterparties must have a short-term credit rating of at least BBB (Standard and Poor's or Fitch) or Baa2 (Moody's).

All OTC derivative transactions, including those managed through Agency Agreements, must be subject to established International Swaps and Derivatives Association, Inc. (ISDA) Master Agreements and have full documentation of all legal obligations of CERS under the transactions. All ISDA Master Agreements entered into by or on behalf of CERS by the KPPA Investment Staff and external manager pursuant to an Agency Agreement shall provide that netting applies (netting allows the parties to an ISDA Master Agreement to aggregate the amounts owed by each of them under all of the transactions outstanding under that ISDA Master Agreement and replace them with a single net amount payable by one party to the other.) The KPPA Investment Staff and external managers may also use collateral arrangements to mitigate counterparty credit or performance risk. If an external manager utilizes a collateral arrangement to mitigate counterparty credit or performance risk the arrangement shall be delineated in the manager's guideline section of the manager's contract.

**Derivatives Applications Not Permitted:**

**Speculation:**

Except for investments in Real Return investments, derivatives may not be used for any activity for which the primary purpose is speculation or to profit while materially increasing risk to CERS. Derivatives are considered speculative if their uses have no material relation to objectives and strategies specified by the CERS IPS or applicable to the CERS portfolio. Derivatives may not be used for circumventing any limitations or restrictions imposed by the CERS IPS or applicable regulatory requirements.

**Leverage:**

Leverage is inherent in derivative contracts since only a small cash deposit is required to establish a much larger economic impact position. Thus, relative to the cash markets, where in most cases the cash outlay is equal to the asset acquired, derivative investments offer the possibility of establishing substantially larger market risk exposures with the same amount of cash as a traditional cash market portfolio. Therefore, risk management and control processes must focus on the total risk, i.e. the net notional value, assumed in a derivative investment.

*The above is not intended to limit CERS from borrowing to cover short-term cash flow needs nor prohibit CERS from loaning securities in accordance with a securities lending agreement.*

The CERS Board recognizes that the voting of proxies is an important responsibility in assuring the overall performance over a longtime horizon. The CERS Board has delegated the responsibility of voting all proxies to ~~the Investment Committee or designee, custodian, investment manager or agent~~ ~~an outside Proxy Voting service provider or contracted external investment manager~~. The CERS Board expects that ~~said delegate(s)~~ ~~the proxy-voting service~~ will execute all proxies in a timely fashion, and in accordance with the ~~Investment Proxy Voting Policy~~ ~~voting policy~~ which has been formally adopted.

**The following policies, as amended, are hereby incorporated by reference into this Investment Policy Statement:**

- A. ~~CERS~~ Investment Procurement Policy as amended and the as amended are hereby incorporated by reference.
- B. CERS Investment Brokerage Policy as amended is hereby incorporated by reference.
- C. CERS Transactions Procedures Policy as amended is hereby incorporated by reference.
- D. CERS Securities Litigation Policy and Procedures as amended is hereby incorporated by reference.
- E. CERS Investment Securities Lending Guidelines as amended is hereby incorporated by

- reference.
- F. CERS Securities Trading Policy for Trustees and Employees as ~~amended is hereby incorporated by reference.~~
- G. CERS Manager and Placement Agent Statement of Disclosure Policy as ~~amended is hereby incorporated by reference.~~
- H. CERS Real Estate Policy as ~~amended and hereby incorporated by reference.~~
- I. CERS Conflict of Interest and Confidentiality Policy as ~~amended and hereby incorporated by reference.~~
- J. CERS **Investment** Proxy Voting Policy as ~~amended and hereby incorporated by reference.~~

Signatories

As Adopted by the CERS Investment Committee

As Adopted by the CERS Board of Trustees

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Signature \_\_\_\_\_

Signature . \_\_\_\_\_

Dr. Merl Hackbart  
Chair, CERS Investment Committee

Ms. Betty Pendergrass  
Chair, CERS Board of Trustees

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**INVESTMENT PROCUREMENT POLICY**

[Adopted: [December 21, 2022](#)]

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**INTRODUCTION**

The Kentucky Revised Statutes mandate that the County Employees Retirement System (CERS) of the Commonwealth of Kentucky, through its Board of Trustees, ("Board") develop and adopt an investment procurement policy ("Policy") (KRS 78.790(6)). The Policy must be designed, in consultation with the Secretary of the Finance and Administration Cabinet, to meet best practices for the procurement of investment goods and services. This Policy functions in concert with other statutes, administrative regulations and guidelines detailing the requirements and parameters for investing trust funds. If any inconsistency exists between the law and this Policy, the law shall control.

The procurement procedures in this Policy will be implemented consistent with the Board's duty to procure the investment managers, goods and services needed to support the investment or management of CERS assets. The CERS Board has delegated investment authority to its Investment Committee, consistent with investment policies adopted by the Board.

A portion of CERS's funds are managed externally by investment managers specializing in mandates such as equities, bonds, other publicly traded securities, alternative investments, real estate, timberland and/or any other asset type authorized by Kentucky law. The Board is responsible for the procurement of services to carry out the investment or management of CERS assets.

Procurements for investment related goods and services will aim to promote competition and best value, giving due consideration to factors including, but not limited to, timing (including emergencies), execution, quality, service and price. Whenever CERS is considering an investment procurement, KPPA staff - rather than members of the Board and Investment Committee - will communicate directly with the principals of the potential vendor to ensure transparency, accountability and compliance with laws and Board policies, including those prohibiting the payment of fees or commissions to placement agents.

**1. Definitions.**

KPPA: means the Kentucky Public Pensions Authority

Alternative investments (alternatives): investments with General Partners or managers in assets such as timberland, private equity and infrastructure that are long-term and illiquid in nature.

Best and final price: request to submit a last and most competitive price to secure a contract.

Co-investment opportunities: an opportunity to invest in a company or property outside of an existing Limited Partnership. Co-investment opportunities arise when the General Partner wants to make an investment for the Partnership, but the total value of that investment is larger than the Partnership can hold. Co-investments generally have much more favorable economics than the investment in the Partnership, and are usually only offered to Limited Partners who have expressed a desire to be offered these opportunities.

Evaluation factors/screening criteria: evaluation criteria that represent the key areas of importance in making a final determination, which shall always include cost/price, as well as other considerations weighted by importance.

External investment manager: a vendor selected by a competitive selection process who is approved by the Investment Committee, subject to ratification by the Board, to invest CERS funds in a manner specified by contract.

Final candidate pool: that subset of vendor(s) from which the final vendor is chosen to provide services to CERS under this Policy.

Competition and best value: seeking vendors that provide the best performance at the lowest cost (economic efficiency) giving due consideration to factors including, but not limited to, performance improvements (faster, more suitable), timing (including emergencies), execution, quality, trust, reputation, service and price.

Independent: having no conflicts of interest with CERS, its Board or staff members, or Kentucky Public Pensions Authority ("KPPA") staff members.

CERS Investment consultant: an external firm or individual retained to advise the Board and the Investment Committee and assist K P P A investment staff as outlined in this Policy or in the governing contract.

Minimum qualifications: the lowest threshold metric for determining whether a vendor is qualified to perform the necessary work.

Specialty investment consultant: an external firm or individual retained to advise the Board and Investment Committee and assist KPPA investment staff, as outlined in this Policy or in the governing contract, including recommending General Partners or managers for alternative investments.

Investment procurement: all contracts for the investment or management of assets of CERS undertaken in accordance with KRS 78.790(6) and this Policy.

Performance attribution: quantifies the relationship between a portfolio's returns and the active decisions of the portfolio manager.

Placement agents: a third party or firm identified in KRS 78.782(20) from receiving fees or commissions incident to an investment by CERS.

Qualitative analysis: a review of a potential vendor that uses unquantifiable information, such as the impact of vendor management expertise, processes and ownership structure on an investment.

Quantitative analysis: economic, business or financial reviews that aim to understand or predict behavior or events through the use of mathematical measurements and calculations, statistical modeling and research.

Quiet Period: a specified timeframe when Board members and staff are restricted in communications with potential vendors in designated procurements.

Request For Information (RFI): a document sent to vendors to request specific information or clarification on a service or product.

Request For Proposals (RFP): a document soliciting proposals for a procurement based on the terms listed in the offering document.

Request For Quotations (RFQ): an invitation to suppliers to bid on providing specific products or services.

## 2. External Manager Selection.

External investment managers are to be chosen through a competitive selection process coordinated by KPPA investment staff and based upon established criteria. The CIO will provide the Investment Committee with a candidate pool of up to three (3) Investment Managers who have met the screening and due diligence criteria. The Investment Committee will determine whether interviews with any potential Investment Manager(s) is required prior to the Committee selecting the new Investment Manager. The selection process, which ~~may typically~~ involves the assistance of CERS's independent investment consultant, ~~will~~ results in a recommendation of an investment manager(s). The recommendation will be made to the CERS Investment Committee for its review and approval, with ratification by the Board no later than at its next meeting.

Normally an open search process will be used when conducting a manager search. KPPA investment staff and/or the independent investment consultant will identify a list of suitable candidates that are appropriate for the mandate. The list of suitable candidates will be developed using a broad-based list of potential managers that meet the screening criteria.

An RFP, RFI or RFQ may also be used when conducting a manager search. The request may be sent directly to known vendors, will be listed on the KPPA website and may be advertised through other means such as financial media. Any advertisement will clearly state the mandate for which CERS is seeking a manager. The advertisement also will state certain minimum requirements that a manager must meet.

KPPA investment staff will provide a written report to the Investment Committee documenting the particulars of the search process that was performed, along with a recommendation on which manager KPPA investment staff proposes be hired. The report will include matters such as the screening criteria, the number of managers considered, the number of managers interviewed, the number of firms in the final candidate pool, the names of the firms in the final candidate pool, any prior CERS (or Kentucky Retirement Systems) history with the manager, references checked and summaries of other qualitative and quantitative analyses.

### A. Determination of Screening Criteria

Screening criteria may include, but are not limited to: investment processes; investment fee schedule; investment products; dollar value and composition of assets under management; historical performance; years of experience; growth of firm; a manager's history with CERS (or Kentucky Retirement Systems); other client relationships (including experience with large public funds); ownership; the number and depth of investment professionals; research capabilities; structure of the proposed investment (separate account, commingled account, limited partnership, etc.); compliance with the federal Investment Advisers Act of 1940, as amended, ~~standard contractual provisions;~~

~~compliance with the Chartered Financial Analyst (CFA) Institute Code of Ethics; compliance with Global Investment Performance Standards as administered by the CFA Institute;~~ and reporting consistent with the Institutional Limited Partners Association (“ILPA”) standards. Other criteria may be added for any search.

**Commented [HV(1)]:** The CFA requirements were removed by the legislature in 2017 and replaced with the Investment Advisers Act of 1940. All references to the CFA need to be replaced.

B. Preliminary Screening

- 1) KPPA staff and/or the CERS investment consultant identify a preliminary list of firms that meet the initial set of screening criteria.
- 2) KPPA staff and/or the CERS investment consultant contact each firm on the preliminary list to determine if they are accepting new business and to obtain the most current information and any additional information, as required. Follow-up telephone calls, interviews or on- site visits are made as necessary.
- 3) Based upon the established criteria, KPPA staff and/or the CERS investment consultant narrows the preliminary list to a candidate pool.

C. Candidate Pool

- 1) KPPA staff and/or the CERS investment consultant conduct a more in-depth interview with each candidate. The interviews may be in person or telephonic/virtual which allows for the interaction with and evaluation of the person or persons who will be investing on behalf of CERS. Interview topics may include:
  - a) Investment process;
  - b) Any action or investigation concerning a candidate by a regulatory or civil or criminal enforcement agency;
  - c) Any SEC forms, other similar agency reports or prospectuses;
  - d) Qualifications of the firm's representatives, including the portfolio management team;
  - e) A list of institutional references;
  - f) Communication with the firm;
  - g) Employee compensation and ownership structure;
  - h) Availability of the contact person and portfolio manager to meet with KPPA investment staff and the Investment Committee and responsiveness to Board and staff concerns;
  - i) Validation of performance and the continued management by key individuals who will be responsible for fulfilling the assignment;
  - j) Accommodation of CERS's priorities;
  - k) Experience with large public funds;
  - l) Fee discussions;



- m) Conflicts of interest, including the appearance of conflicts of interest. Potential or actual conflicts of interest must be evaluated during the due diligence process and after engagement under the Board's Conflict of Interest and Confidentiality Policy and any applicable statutes and regulations. The KPPA investment staff will employ reasonable efforts to identify conflicts of interest affecting CERS trustees, employees and managers with respect to all investments.
  - n) Placement agents. KPPA investment staff will employ reasonable due diligence to ensure that no fees or commissions are paid to a third party or firm pursuant to KRS 78.782(20) or Board policies.
- 2) Quantitative analyses also are conducted in addition to the qualitative analyses above. These analyses will include performance attribution and risk management.
- 3) Additional due diligence factors may be necessary in selecting General Partners or managers for alternative investments (such as timberland, private equity and infrastructure) because of the long-term and illiquid nature of these types of investments. The additional factors include particular considerations such as risk management; diversification; and legal and business matters.
- a) CERS may engage independent specialized consultants to assist in the selection of these managers.
  - b) KPPA staff and/or consultants will narrow potential funds to seek best-in-class managers.
  - c) Any new fund offering by an existing manager (also known as a reup) will be evaluated consistent with the process described above (understanding that some of the materials and knowledge for conducting due diligence already may have been obtained based on the prior investment with the manager).
- 4) KPPA staff and - if involved in the process - the CERS investment consultant (or any engaged specialty investment consultant), will reach a consensus regarding a manager for the final written recommendation to the Investment Committee. Any approval by the Investment Committee is subject to the review by and ratification of the Board, the completion of due diligence and the negotiation and execution of a contract.
- a) It is critical that the terms of the contract accurately reflect the terms and conditions of the authorization. The process may involve highly specialized contract provisions, including investment guidelines, and result in protracted negotiations. KPPA investment staff may request the approval of the Investment Committee to retain outside counsel to assist in the contract process.

- b) The investment manager must certify that no fees or commissions are paid to a third party or firm prohibited, either by KRS 78.782(20) or Board policies, from receiving fees or commissions incident to an investment by CERS.

D. An approval of a manager by the Investment Committee is to be reported to the Board no later than at its next meeting for review and ratification.

**3. Co-Investment Opportunities.**

Co-Investment opportunities occurring from General Partners, funds, or other investment managers already contained in the CERS portfolio and previously approved by the Investment Committee and Board may be authorized by KPPA's Director Office of Investments ("CIO") in amounts up to 1.5% of the plan assets, considering the following:

- 1) The co-investments may be made alongside an existing General Partner, provided that the strategy and objective of the Partnership investing in the transaction are consistent with those of the Partnership in which CERS has an existing commitment.
- 2) Co-investments shall be made on the same (or better) terms and conditions as provided to the Partnership;

**4. External Investment Consultant Selection.**

External investment consultants are to be chosen through a competitive selection process coordinated by KPPA investment staff and based upon established criteria. The selection process shall result in a recommendation of a consultant to the Investment Committee for its review and approval, with ratification by the Board at its next meeting. Notwithstanding the above, the Investment Committee reserves the right to contract for its own Investment Consultant pursuant to KRS 78.782(2)(d).

CERS normally will use an open search process when conducting a consultant search. A list of suitable candidates will be developed by KPPA investment staff using a broad-based list of potential consultants that meet the screening criteria.

CERS also may use a request process such as an RFP, RFI or RFQ when conducting a consultant search. The request may be sent directly to known vendors, will be listed on the KPPA website and may be advertised through other means such as financial media. Any advertisement will clearly state the mandate for which CERS is seeking a consultant. The advertisement also will state certain minimum requirements that a consultant must meet.

KPPA investment staff will provide a written report to the Investment Committee documenting the particulars of the search process that was performed, along with a recommendation on which consultant staff proposes be hired. The report will include matters such as the firm name, screening criteria, the number of consultants considered, the number of consultants interviewed, the number of firms in the final candidate pool and their names, any prior CERS (or Kentucky Retirement Systems) history with the consultant, references checked and summaries of other

qualitative and quantitative analyses.

A. Determination of Screening Criteria.

Screening criteria for an External Investment Consultant may include, but are not limited to: depth, breadth and experience in consulting similar plans, organizational strength, firm stability, key personnel, financial condition, industry reputation, client list, soundness and compatibility of investment philosophy and approach, breadth and capability of technological resources, research platform, risk reporting, fee proposal, size of public institutional, tax-exempt client AUM; size of pension fund client assets; consultant's history with CERS; other client relationships (including experience with large public funds); ownership; the number and depth of investment professionals; research capabilities; compliance with standard contractual provisions; compliance with the Chartered Financial Analyst (CFA) Institute Code of Ethics; compliance with Global Investment Performance Standards as administered by the CFA Institute; and reporting consistent with the Institutional Limited Partners Association standards. Other criteria may be added for any search.

B. Preliminary Screening.

- 1) KPPA investment staff will identify a preliminary list of firms that meet the initial set of screening criteria.
- 2) KPPA investment staff will contact each firm on the preliminary list to determine if they are accepting new business, would be interested in being a candidate, and to obtain the most current information and any additional information, as required. Follow-up telephone calls, interviews, or on-site visits are made as necessary.
- 3) Based upon the established criteria, KPPA investment staff narrows the preliminary list to a candidate pool.

C. Analysis.

- 1) KPPA investment staff will conduct a qualitative and quantitative analysis utilizing criteria developed by KPPA investment staff identified to meet the External Investment Consultant needs of the Agency.
- 2) KPPA investment staff will utilize, as necessary, additional diligence factors for consideration in selecting an External Investment Consultant. KPPA investment staff may conduct interviews, in- person or telephonic/virtual, which allows for the interaction with and evaluation of the person or persons who will be providing consulting services. References will be checked.
- 3) It is critical that the terms of the contract accurately reflect the terms and conditions of the authorization. The process may involve highly specialized contract provisions, including investment guidelines, and result in protracted negotiations. Staff may retain outside counsel to assist in the contract process.
- 4) KPPA investment staff will reach a consensus regarding an External Investment Consultant to be provided as a final written recommendation to the Investment Committee. Any approval by the Investment Committee is subject to the review and

ratification of the board, the completion of due diligence and the negotiation and execution of a contract. An approval of an External Investment Consultant by the Investment Committee is reported to the CERS Board no later than at its next quarterly meeting for review and ratification.

**5. Procurement of investment analytical, professional, research and technical services.**

KPPA investment staff will procure investment-related goods and services through one of the methods below. Nothing in this section shall apply to the procurement of ordinary goods and services that are common to other KPPA administrative functions.

- A. Procurement of goods and services costing **less than \$510,000** during a fiscal year will be determined by KPPA staff based upon best value comparing known vendors. In comparing vendors, staff will promote the highest level of competition.
- B. Procurement of goods and services costing **from \$510,000 to \$2449,999** during a fiscal year will be determined by any ~~one~~ two (2) of the following: the KPPA Executive Director Office of Investments, or his/her designee, the CERS Chief Executive Officer ("CEO"), or any KPPA employee designated by CERS to act in its stead, based upon best value comparing at least three (3) known vendors, whose price quotations may be obtained by telephone, catalog, or internet. Any procurement made under this subsection shall be reported to the CERS CEO, or, if the CERS CEO is the person making the procurement decision, to the Chair of the Investment Committee.
- C. Procurement of goods and services **equal to or greater than \$2550,000** in cost during a fiscal year will be determined ~~solely by the two of the following: CERS CEO KPPA Executive Director, or any KPPA employee designated by CERS to act in its stead, based upon best value comparing at least three (3) known vendors, whose price quotations must be obtained in written form on the vendor's letterhead. The price quotations received and comments concerning the basis for placing the order shall be recorded in writing and shall be placed in a file to be maintained by KPPA. These records are retained by KPPA for record, audit, and review an RFP, RFI and/or RFQ for good or services being published. The request may be sent directly to known vendors; will be listed on the KPPA website; and may be advertised through other means, such as financial media, as appropriate to promote the highest level of competition. The request will describe the goods or services required, the type of information and data required of each vendor, the relative importance of qualifications and the evaluation factors to be used. After determining the best value of proposals received, a contract for goods or services with a vendor may be negotiated. If contract terms cannot be agreed upon with the highest-ranking vendor, negotiations may be conducted with other vendor(s) in the order of ranking as defined by the request. The evaluation of best value will be documented by KPPA investment staff. The documentation will include specifics of the process used in selecting the vendor. Those specifics may include: price, the number of vendors considered, the number of vendors interviewed, any prior CERS (or Kentucky Retirement Systems) history with the vendor,~~

[references checked and summaries of other qualitative and quantitative analyses.](#)

- D. A price contract established by the Commonwealth of Kentucky, the U.S. General Services Administration or U.S. Communities (a national government purchasing cooperative) [may be used](#) so long as the vendor enters into a contract at or below the contract price and under the same terms and conditions.

An RFP, RFI and/or RFQ for goods or services may be published. The request may be sent directly to known vendors; will be listed on the KPPA website; and may be advertised through other means, such as financial media, as appropriate to promote the highest level of competition. The request will describe the goods or services required, the type of information and data required of each vendor, the relative importance of qualifications and the evaluation factors to be used. After determining the best value of proposals received, a contract for goods or services with a vendor may be negotiated. If contract terms cannot be agreed upon with the highest-ranking vendor, negotiations may be conducted with other vendor(s) in the order of ranking as defined by the request. The evaluation of best value will be documented by KPPA investment staff. The documentation will include specifics of the process used in selecting the vendor. Those specifics may include: price, the number of vendors considered, the number of vendors interviewed, any prior CERS (or Kentucky Retirement Systems) history with the vendor, references checked and summaries of other qualitative and quantitative analyses.

- E. Exceptions to using the methods of procurement above [may](#) include, but are not limited to: goods and services available only from one or two uniquely qualified sources; advertisements and public notices; and copyrighted computer software. The reason for the exception will be documented.

**6. Contract Renewal.**

Contract renewals [for contracts procured under Sections 2, 3 and 4 above](#), whether they be annual or longer-term agreements, use criteria such as the continued need of the vendor and/or asset class; level of trust; continuity of ownership, leadership and process; long-term performance; and competitiveness of fees. [For contracts procured under Sections 2, 3 and 4 above](#), KPPA investment staff will submit a formal recommendation regarding the renewal of a contract to the Investment Committee for approval. The submission to the Investment Committee will include a description of the process used in making the recommendation to renew the contract. Any approval by the Investment Committee is subject to the review by and ratification of the Board, the completion of due diligence and the negotiation and execution of a contract, [or contract renewal or extension](#).

[Contract renewals for goods and services procured under Section 5 above, because the initial contract award did not have to be presented to the Investment Committee for approval, shall follow the procedures set forth in Section 5 for the awarding of the contract.](#)

**7. Emergency Procurement.**

The existence of an emergency may cause an immediate need for managers, goods and/or services that cannot be procured through CERS's normal investment procurement procedures. The determination that an emergency exists is to be made by, and procurement actions approved by, any two of the following: Executive Director Office of Investments, the Deputy Director Office of Investments, the CERS CEO, or the CERS Investment Committee Chair. Thereafter, no later than at the next quarterly meetings of the Board and Investment Committee, the emergency and procurement actions incident to the emergency will be reported.

**8. Quiet Period.**

To ensure a competitive and fair procurement, KPPA staff, the Board and the Investment Committee members will follow a quiet period with potential vendors during specified timeframes. A quiet period is a specified timeframe when staff, the Board and Investment Committee members are restricted in communications with potential vendors in designated procurements. Staff assigned to the procurement are not covered by the quiet period and will notify the Board, Investment Committee and other staff upon initiation of a quiet period and a description of the types of vendors to whom it applies. During quiet periods, covered staff, the Board and Investment Committee members will not communicate with potential vendors or with an existing vendor on matters pertaining to the procurement, except during Board or Investment Committee meetings.

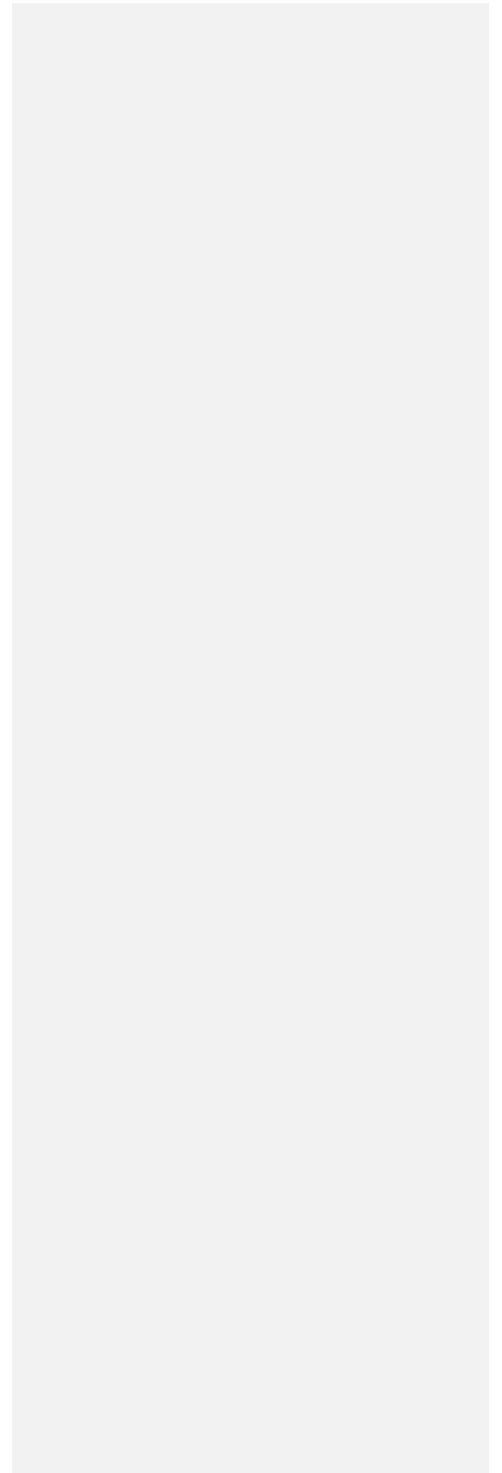
A quiet period will cease when the approval of a vendor has been ratified by the Board, or if the search process or quiet period are otherwise ended.

**9. Other Laws and Policies that Comprise CERS Investment Procurement Policy.**

This policy is to be implemented in conjunction and accordance with the laws and other policies that, cumulatively, establish the comprehensive CERS Investment Procurement Policy under which all CERS investment procurements are to be made. These laws and other policies are as follows, but are not limited to:

- A. Executive Branch Code of Ethics (KRS Chapter 11A);
- B. Board as fiduciary (KRS78.790(1)(c));
- C. Pension Fund investment requirements (KRS 78.790);
- D. CERS conflict of interest prohibitions (KRS 78.745);
- E. CERS confidentiality requirement (KRS 78.745);
- F. Insurance Fund investment requirements (KRS 61.701 and 105 KAR 1:410); and
- G. County Employees Retirement System Board of Trustees Election Policy and Procedure, Statement of Bylaws and Committee Organization, Trustees Education Program, Conflict of Interest and Confidentiality Policy, Policy and Procedures Regarding Open Records Requests, CFA Code of Ethics and Standards of Professional Conduct, CFA Asset Manager Code of Professional Conduct, federal Investment Advisers Act of 1940, as amended, and CFA Code

of Conduct for Members of a Pension Scheme Governing Body.



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**CERTIFICATION OF ADOPTION BY BOARD OF TRUSTEES**

This is to certify that this County Employees Retirement System Investment Procurement Policy was approved and adopted by the Board of Trustees of the County Employees Retirement System.

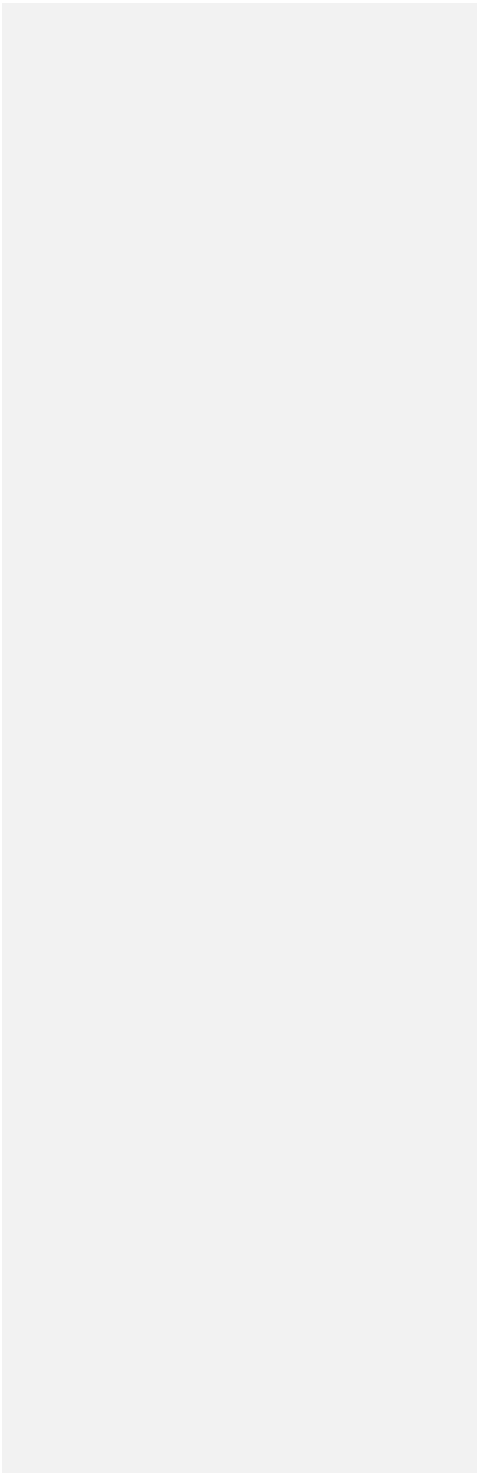
\_\_\_\_\_ Date: \_\_\_\_\_  
Betty A. Pendergrass, Chair  
CERS Board of Trustees

\_\_\_\_\_ Date: \_\_\_\_\_  
Ed Owens  
CERS Chief Executive Officer

**CERTIFICATION OF FINANCE AND ADMINISTRATION CABINET**

This certifies that the Investment Procurement Policy of the County Employees Retirement System of the Commonwealth of Kentucky, attached hereto, meets best practices for investment management procurement as specified KRS 78.790(6).

\_\_\_\_\_ Date: \_\_\_\_\_  
Holly M. Johnson  
Secretary of the Finance and  
Administration Cabinet  
Commonwealth of Kentucky





CERS Special Called Board Meeting - Actuarial Assumptions

Kentucky Public Pensions Authority  
CERS Non-Hazardous Retirement Fund  
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially Determined Contribution
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2022	\$ 15,674	\$ 8,149	\$ 7,525	52%	\$ 630	\$ 135	\$ 2,691	23.40%	23.40%
2023	16,017	8,466	7,551	53%	641	137	2,745	23.34%	23.34%
2024	16,335	8,783	7,552	54%	647	140	2,800	23.12%	23.12%
2025	16,632	9,168	7,464	55%	656	143	2,856	22.96%	22.96%
2026	16,908	9,277	7,631	55%	658	146	2,913	22.60%	22.60%
2027	17,162	9,578	7,584	56%	683	149	2,971	22.99%	22.99%
2028	17,394	9,888	7,506	57%	691	152	3,031	22.80%	22.80%
2029	17,605	10,192	7,413	58%	700	155	3,091	22.63%	22.63%
2030	17,797	10,493	7,304	59%	709	158	3,153	22.47%	22.47%
2031	17,972	10,794	7,178	60%	718	161	3,216	22.32%	22.32%
2032	18,134	11,101	7,033	61%	729	164	3,281	22.21%	22.21%
2033	18,294	11,426	6,868	63%	739	167	3,346	22.09%	22.09%
2034	18,444	11,763	6,681	64%	751	171	3,413	21.99%	21.99%
2035	18,586	12,115	6,471	65%	763	174	3,481	21.91%	21.91%
2036	18,722	12,488	6,234	67%	775	178	3,551	21.82%	21.82%
2037	18,859	12,887	5,972	68%	788	181	3,622	21.76%	21.76%
2038	19,001	13,321	5,680	70%	802	185	3,694	21.70%	21.70%
2039	19,152	13,794	5,358	72%	816	188	3,768	21.66%	21.66%
2040	19,315	14,313	5,002	74%	823	192	3,844	21.42%	21.42%
2041	19,493	14,875	4,618	76%	873	196	3,921	22.28%	22.28%
2042	19,688	15,527	4,161	79%	854	200	3,999	21.35%	21.35%
2043	19,902	16,205	3,697	81%	867	204	4,079	21.25%	21.25%
2044	20,137	16,943	3,194	84%	881	208	4,160	21.17%	21.17%
2045	20,393	17,747	2,646	87%	904	212	4,244	21.31%	21.31%
2046	20,673	18,630	2,043	90%	896	216	4,329	20.70%	20.70%
2047	20,977	19,564	1,413	93%	914	221	4,415	20.70%	20.70%
2048	21,307	20,579	728	97%	933	225	4,503	20.71%	20.71%
2049	21,664	21,664	-	100%	167	230	4,594	3.63%	3.63%
2050	22,048	22,048	-	100%	170	234	4,685	3.63%	3.63%
2051	22,461	22,461	-	100%	173	239	4,779	3.63%	3.63%

Notes and assumptions:

The projection is based on the results of the June 30, 2022 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

New active members are assumed to be hired as current active members are assumed to terminate employment or retire.

The total active population is assumed to remain level throughout the entire projection.

Covered payroll is assumed to increase 2% each year throughout the entire projection.

The Board certified contribution rate paid by employers is assumed to be equal to the full actuarially determined contribution rate, except as allowed by

House Bill 362 (passed during the 2018 legislative session), which limits the certified contribution rate to a 12% increase over the prior year rate for the period of July 1, 2018 to June 30, 2028.



CERS Special Called Board Meeting - Actuarial Assumptions

Kentucky Public Pensions Authority  
CERS Hazardous Retirement Fund  
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially Determined Contribution
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2022	\$ 5,862	\$ 2,789	\$ 3,073	48%	\$ 266	\$ 50	\$ 621	42.81%	42.81%
2023	6,023	2,951	3,072	49%	260	51	633	41.11%	41.11%
2024	6,174	3,103	3,071	50%	263	52	646	40.77%	40.77%
2025	6,319	3,279	3,040	52%	267	53	659	40.50%	40.50%
2026	6,457	3,365	3,092	52%	268	54	672	39.92%	39.92%
2027	6,589	3,520	3,069	53%	277	55	686	40.44%	40.44%
2028	6,715	3,680	3,035	55%	280	56	699	40.10%	40.10%
2029	6,838	3,843	2,995	56%	284	57	713	39.79%	39.79%
2030	6,958	4,011	2,947	58%	288	58	728	39.53%	39.53%
2031	7,080	4,188	2,892	59%	292	59	742	39.31%	39.31%
2032	7,205	4,374	2,831	61%	296	61	757	39.13%	39.13%
2033	7,334	4,574	2,760	62%	301	62	772	38.97%	38.97%
2034	7,467	4,787	2,680	64%	306	63	787	38.82%	38.82%
2035	7,604	5,014	2,590	66%	311	64	803	38.68%	38.68%
2036	7,744	5,254	2,490	68%	316	66	819	38.54%	38.54%
2037	7,885	5,507	2,378	70%	321	67	836	38.39%	38.39%
2038	8,025	5,772	2,253	72%	326	68	852	38.21%	38.21%
2039	8,164	6,048	2,116	74%	331	70	869	38.05%	38.05%
2040	8,301	6,337	1,964	76%	324	71	887	36.48%	36.48%
2041	8,438	6,627	1,811	79%	331	72	905	36.56%	36.56%
2042	8,578	6,937	1,641	81%	334	74	923	36.21%	36.21%
2043	8,721	7,263	1,458	83%	339	75	941	36.00%	36.00%
2044	8,867	7,608	1,259	86%	344	77	960	35.83%	35.83%
2045	9,015	7,972	1,043	88%	353	78	979	36.01%	36.01%
2046	9,164	8,358	806	91%	351	80	999	35.12%	35.12%
2047	9,316	8,759	557	94%	358	81	1,019	35.14%	35.14%
2048	9,471	9,185	286	97%	365	83	1,039	35.15%	35.15%
2049	9,629	9,629	-	100%	62	85	1,060	5.88%	5.88%
2050	9,790	9,790	-	100%	64	86	1,081	5.90%	5.90%
2051	9,955	9,955	-	100%	65	88	1,103	5.91%	5.91%

Notes and assumptions:

The projection is based on the results of the June 30, 2022 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

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House Bill 362 (passed during the 2018 legislative session), which limits the certified contribution rate to a 12% increase over the prior year rate for the period of July 1, 2018 to June 30, 2028.



CERS Special Called Board Meeting - Actuarial Assumptions

Kentucky Public Pensions Authority  
CERS Non-Hazardous Insurance Fund  
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially Determined Contribution
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2022	\$ 2,392	\$ 3,160	\$ (768)	132%	\$ 90	\$ 16	\$ 2,663	3.39%	3.39%
2023	2,513	3,345	(832)	133%	-	17	2,716	0.00%	0.00%
2024	2,633	3,446	(813)	131%	-	18	2,770	0.00%	0.00%
2025	2,751	3,575	(824)	130%	-	20	2,826	0.00%	0.00%
2026	2,866	3,606	(740)	126%	-	21	2,882	0.00%	0.00%
2027	2,976	3,710	(734)	125%	-	23	2,940	0.00%	0.00%
2028	3,082	3,810	(728)	124%	-	24	2,999	0.00%	0.00%
2029	3,183	3,907	(724)	123%	-	25	3,059	0.00%	0.00%
2030	3,279	4,002	(723)	122%	-	27	3,120	0.00%	0.00%
2031	3,372	4,093	(721)	121%	-	28	3,182	0.00%	0.00%
2032	3,462	4,183	(721)	121%	-	29	3,246	0.00%	0.00%
2033	3,550	4,272	(722)	120%	-	31	3,311	0.00%	0.00%
2034	3,639	4,362	(723)	120%	-	32	3,377	0.00%	0.00%
2035	3,729	4,454	(725)	119%	-	33	3,445	0.00%	0.00%
2036	3,822	4,550	(728)	119%	-	34	3,514	0.00%	0.00%
2037	3,920	4,651	(731)	119%	-	35	3,584	0.00%	0.00%
2038	4,023	4,756	(733)	118%	-	36	3,655	0.00%	0.00%
2039	4,132	4,869	(737)	118%	-	37	3,729	0.00%	0.00%
2040	4,249	4,988	(739)	117%	-	38	3,803	0.00%	0.00%
2041	4,372	5,115	(743)	117%	-	38	3,879	0.00%	0.00%
2042	4,501	5,247	(746)	117%	4	39	3,957	0.09%	0.09%
2043	4,638	5,389	(751)	116%	4	40	4,036	0.10%	0.10%
2044	4,780	5,538	(758)	116%	5	41	4,117	0.13%	0.13%
2045	4,927	5,694	(767)	116%	10	42	4,199	0.24%	0.24%
2046	5,078	5,859	(781)	115%	5	43	4,283	0.12%	0.12%
2047	5,233	6,022	(789)	115%	9	44	4,369	0.21%	0.21%
2048	5,390	6,193	(803)	115%	15	45	4,456	0.33%	0.33%
2049	5,550	5,550	-	100%	-	45	4,545	0.00%	0.00%
2050	5,710	5,710	-	100%	-	46	4,636	0.00%	0.00%
2051	5,870	5,870	-	100%	-	47	4,729	0.00%	0.00%

Notes and assumptions:

The projection is based on the results of the June 30, 2022 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

New active members are assumed to be hired as current active members are assumed to terminate employment or retire.

The total active population is assumed to remain level throughout the entire projection.

Covered payroll is assumed to increase 2% each year throughout the entire projection.

The Board certified contribution rate paid by employers is assumed to be equal to the full actuarially determined contribution rate, except as allowed by

House Bill 362 (passed during the 2018 legislative session), which limits the certified contribution rate to a 12% increase over the prior year rate for the period of July 1, 2018 to June 30, 2028.



CERS Special Called Board Meeting - Actuarial Assumptions

Kentucky Public Pensions Authority  
CERS Hazardous Insurance Fund  
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially Determined Contribution
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2022	\$ 1,538	\$ 1,554	\$ (16)	101%	\$ 42	\$ 4	\$ 617	6.78%	6.78%
2023	1,569	1,597	(28)	102%	16	4	629	2.58%	2.58%
2024	1,592	1,610	(18)	101%	15	4	642	2.29%	2.29%
2025	1,609	1,632	(23)	101%	13	5	654	2.06%	2.06%
2026	1,618	1,597	21	99%	11	5	668	1.65%	1.65%
2027	1,624	1,593	31	98%	13	5	681	1.90%	1.90%
2028	1,627	1,588	39	98%	12	6	695	1.70%	1.70%
2029	1,626	1,578	48	97%	11	6	708	1.55%	1.55%
2030	1,623	1,565	58	96%	10	7	723	1.42%	1.42%
2031	1,617	1,548	69	96%	10	7	737	1.32%	1.32%
2032	1,610	1,530	80	95%	9	7	752	1.23%	1.23%
2033	1,604	1,510	94	94%	9	7	767	1.17%	1.17%
2034	1,598	1,490	108	93%	9	8	782	1.13%	1.13%
2035	1,593	1,471	122	92%	9	8	798	1.08%	1.08%
2036	1,593	1,454	139	91%	8	8	814	1.04%	1.04%
2037	1,597	1,440	157	90%	8	8	830	1.02%	1.02%
2038	1,605	1,430	175	89%	8	8	847	1.00%	1.00%
2039	1,618	1,423	195	88%	8	9	864	0.98%	0.98%
2040	1,636	1,419	217	87%	14	9	881	1.55%	1.55%
2041	1,659	1,424	235	86%	26	9	898	2.88%	2.88%
2042	1,685	1,444	241	86%	60	9	916	6.55%	6.55%
2043	1,717	1,504	213	88%	60	9	935	6.47%	6.47%
2044	1,753	1,570	183	90%	61	10	953	6.41%	6.41%
2045	1,792	1,641	151	92%	64	10	973	6.55%	6.55%
2046	1,833	1,719	114	94%	60	10	992	6.07%	6.07%
2047	1,875	1,797	78	96%	61	10	1,012	6.06%	6.06%
2048	1,918	1,879	39	98%	62	10	1,032	6.04%	6.04%
2049	1,962	1,962	-	100%	19	11	1,053	1.79%	1.79%
2050	2,006	2,006	-	100%	19	11	1,074	1.76%	1.76%
2051	2,049	2,049	-	100%	19	11	1,095	1.73%	1.73%

Notes and assumptions:

The projection is based on the results of the June 30, 2022 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

New active members are assumed to be hired as current active members are assumed to terminate employment or retire.

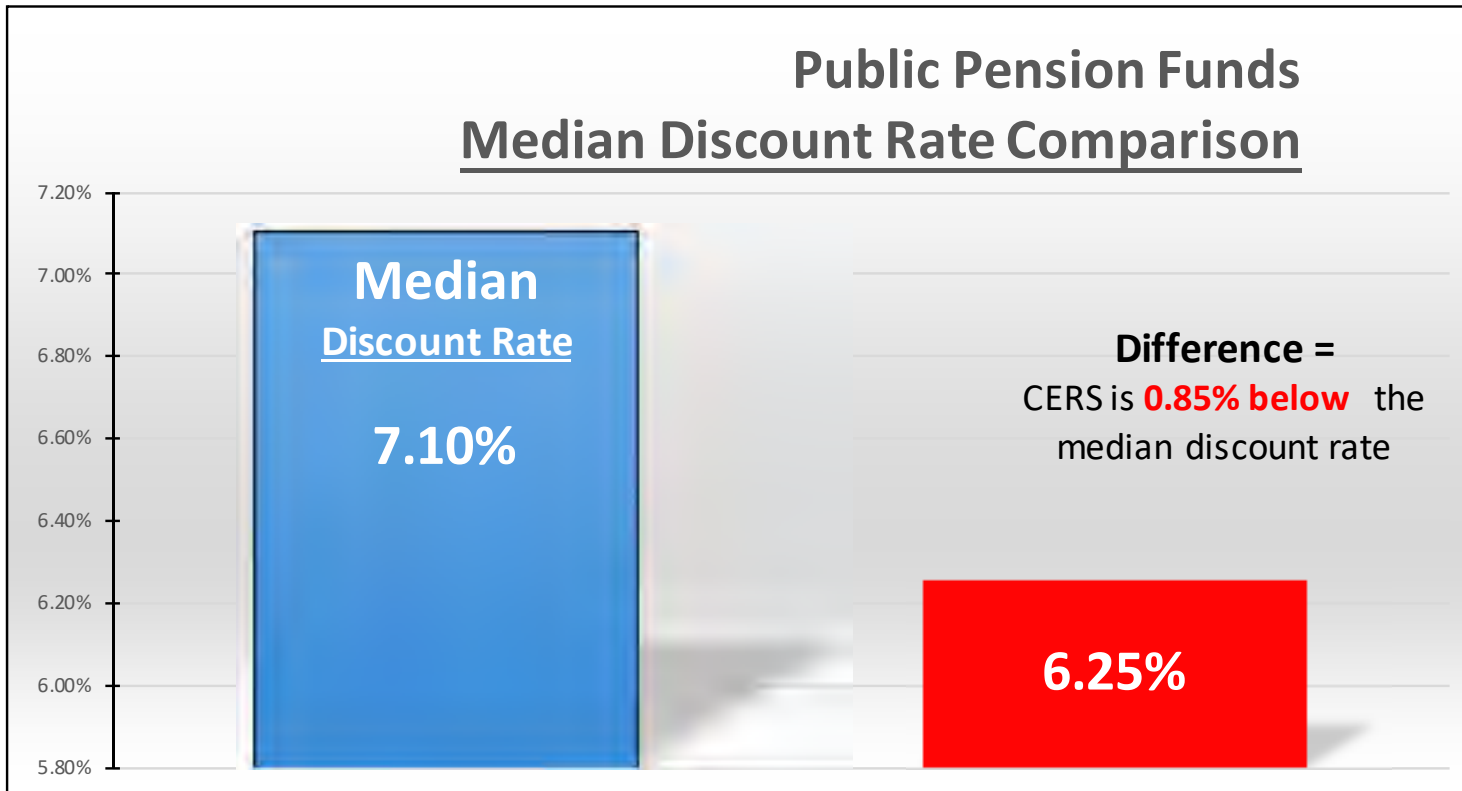
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House Bill 362 (passed during the 2018 legislative session), which limits the certified contribution rate to a 12% increase over the prior year rate for the period of July 1, 2018 to June 30, 2028.







December 5, 2022

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

**Re: Sensitivity Analysis Based on Results of the June 30, 2022 Actuarial Valuation**

Dear Members of the Board:

Per Kentucky State Statute 61.670, we are providing this supplemental information regarding the sensitivity of the valuation results to changes in some of the economic assumptions. Specifically, the enclosed tables show the impact for the **County Employees Retirement System (CERS)** due to changes in the investment return assumption, the inflation rate assumption, and the payroll growth rate assumption.

**Background**

Investment Assumption

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 1.00% increase and a 1.00% 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.

Inflation Assumption

The inflation assumption underlies most of the other economic assumptions, including the investment return, salary increases, and payroll growth rate. This is a macroeconomic assumption and as such the same assumption is used in the valuation of each of the retirement systems. The current assumption is 2.30% for all funds. The sensitivity analysis shows the financial impact of a 0.25% increase and a 0.25% decrease in the inflation assumption. Note, the change in the inflation assumption results in a corresponding change in the investment return assumption, the individual salary increase assumption for projecting members' benefit amounts, the payroll growth rate assumption, and the healthcare trend assumption that is used in the valuation of the health insurance funds.

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### Payroll Growth Assumption

Participating employers of CERS make contributions to the system as a percentage of the covered payroll. Therefore, as payroll changes over time these amortization payments will also change. If actual covered payroll increases at a rate that is less than assumed, then the retirement system receives fewer contribution dollars than expected to finance the unfunded liability, which means the contribution rates in future years will be required to increase in order to finance the unfunded liability over the same time period. The current payroll growth assumption is 2.00% for all the CERS retirement and insurance funds. The analysis shows the impact of a 1.00% increase and a 1.00% decrease in the payroll growth assumption.

Please note that the payroll growth assumption does not impact the valuation liabilities, unfunded liability, or funded status of the system. Rather, this assumption only impacts the amortization rate for financing the existing unfunded actuarial accrued liability and the actuarially determined employer contribution. For purposes of this analysis, the investment return assumption and the inflation assumption are held at their current valuation assumptions.

### **Certification**

The information provided in this letter compliments the information provided in the June 30, 2022 actuarial valuation report. Please refer to the June 30, 2022 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.

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 inflation, assumed rate of return, and payroll growth assumption.

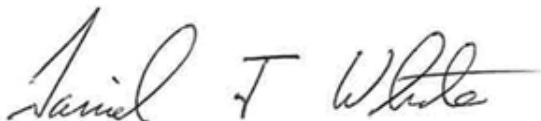


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The undersigned are independent actuaries and consultants. Both of the undersigned are Enrolled Actuaries, Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial 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



Jamie Shaw, ASA, EA, MAAA  
Consultant





**Sensitivity Analysis - Discount Rate**  
**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	5.25%	6.25%	7.25%
Discount Rate - Insurance	5.25%	6.25%	7.25%
<b>Retirement</b>			
Actuarial Accrued Liability	\$ 17,539,982	\$ 15,674,220	\$ 14,127,391
Actuarial Value of Assets	8,148,912	8,148,912	8,148,912
Unfunded Actuarial Accrued Liability	9,391,070	7,525,308	5,978,479
Funded Ratio	46.5%	52.0%	57.7%
Actuarially Determined Contribution Rate	29.11%	23.34%	18.47%
<b>Insurance</b>			
Actuarial Accrued Liability	\$ 2,718,439	\$ 2,391,990	\$ 2,123,373
Actuarial Value of Assets	3,160,084	3,160,084	3,160,084
Unfunded Actuarial Accrued Liability	(441,645)	(768,094)	(1,036,711)
Funded Ratio	116.2%	132.1%	148.8%
Actuarially Determined Contribution Rate	1.04%	0.00%	0.00%
<b>Combined</b>			
Actuarial Accrued Liability	\$ 20,258,421	\$ 18,066,210	\$ 16,250,764
Actuarial Value of Assets	11,308,996	11,308,996	11,308,996
Unfunded Actuarial Accrued Liability	8,949,425	6,757,214	4,941,768
Funded Ratio	55.8%	62.6%	69.6%
Actuarially Determined Contribution Rate	30.15%	23.34%	18.47%



**Sensitivity Analysis - Inflation Rate**  
**Non-Hazardous Members**  
(Dollar amounts expressed in thousands)

(1)	Decrease Inflation Rate (2)	Valuation Results (3)	Increase Inflation Rate (4)
Payroll Growth Rate	1.75%	2.00%	2.25%
Inflation Rate	2.05%	2.30%	2.55%
Discount Rate - Retirement	6.00%	6.25%	6.50%
Discount Rate - Insurance	6.00%	6.25%	6.50%
<b>Retirement</b>			
Actuarial Accrued Liability	\$ 16,068,086	\$ 15,674,220	\$ 15,298,648
Actuarial Value of Assets	8,148,912	8,148,912	8,148,912
Unfunded Actuarial Accrued Liability	7,919,174	7,525,308	7,149,736
Funded Ratio	50.7%	52.0%	53.3%
Actuarially Determined Contribution Rate	24.86%	23.34%	21.90%
<b>Insurance</b>			
Actuarial Accrued Liability	\$ 2,407,260	\$ 2,391,990	\$ 2,378,335
Actuarial Value of Assets	3,160,084	3,160,084	3,160,084
Unfunded Actuarial Accrued Liability	(752,824)	(768,094)	(781,749)
Funded Ratio	131.3%	132.1%	132.9%
Actuarially Determined Contribution Rate	0.00%	0.00%	0.00%
<b>Combined</b>			
Actuarial Accrued Liability	\$ 18,475,346	\$ 18,066,210	\$ 17,676,983
Actuarial Value of Assets	11,308,996	11,308,996	11,308,996
Unfunded Actuarial Accrued Liability	7,166,350	6,757,214	6,367,987
Funded Ratio	61.2%	62.6%	64.0%
Actuarially Determined Contribution Rate	24.86%	23.34%	21.90%



**Sensitivity Analysis - Payroll Growth**  
**Non-Hazardous Members**  
(Dollar amounts expressed in thousands)

(1)	Decrease Payroll Growth (2)	Valuation Results (3)	Increase Payroll Growth (4)
Payroll Growth Rate	1.00%	2.00%	3.00%
Inflation Rate	2.30%	2.30%	2.30%
Discount Rate - Retirement	6.25%	6.25%	6.25%
Discount Rate - Insurance	6.25%	6.25%	6.25%

**Retirement**

Actuarial Accrued Liability	\$ 15,674,220	\$ 15,674,220	\$ 15,674,220
Actuarial Value of Assets	8,148,912	8,148,912	8,148,912
Unfunded Actuarial Accrued Liability	7,525,308	7,525,308	7,525,308
Funded Ratio	52.0%	52.0%	52.0%
Actuarially Determined Contribution Rate	25.31%	23.34%	21.51%

**Insurance**

Actuarial Accrued Liability	\$ 2,391,990	\$ 2,391,990	\$ 2,391,990
Actuarial Value of Assets	3,160,084	3,160,084	3,160,084
Unfunded Actuarial Accrued Liability	(768,094)	(768,094)	(768,094)
Funded Ratio	132.1%	132.1%	132.1%
Actuarially Determined Contribution Rate	0.00%	0.00%	0.00%

**Combined**

Actuarial Accrued Liability	\$ 18,066,210	\$ 18,066,210	\$ 18,066,210
Actuarial Value of Assets	11,308,996	11,308,996	11,308,996
Unfunded Actuarial Accrued Liability	6,757,214	6,757,214	6,757,214
Funded Ratio	62.6%	62.6%	62.6%
Actuarially Determined Contribution Rate	25.31%	23.34%	21.51%



**Sensitivity Analysis - Discount Rate**  
**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	5.25%	6.25%	7.25%
Discount Rate - Insurance	5.25%	6.25%	7.25%

**Retirement**

Actuarial Accrued Liability	\$ 6,629,771	\$ 5,861,691	\$ 5,236,943
Actuarial Value of Assets	2,788,714	2,788,714	2,788,714
Unfunded Actuarial Accrued Liability	3,841,057	3,072,977	2,448,229
Funded Ratio	42.1%	47.6%	53.3%
Actuarially Determined Contribution Rate	51.57%	41.11%	32.42%

**Insurance**

Actuarial Accrued Liability	\$ 1,717,230	\$ 1,538,131	\$ 1,389,908
Actuarial Value of Assets	1,553,761	1,553,761	1,553,761
Unfunded Actuarial Accrued Liability	163,469	(15,630)	(163,853)
Funded Ratio	90.5%	101.0%	111.8%
Actuarially Determined Contribution Rate	6.08%	2.58%	0.00%

**Combined**

Actuarial Accrued Liability	\$ 8,347,001	\$ 7,399,822	\$ 6,626,851
Actuarial Value of Assets	4,342,475	4,342,475	4,342,475
Unfunded Actuarial Accrued Liability	4,004,526	3,057,347	2,284,376
Funded Ratio	52.0%	58.7%	65.5%
Actuarially Determined Contribution Rate	57.65%	43.69%	32.42%



**Sensitivity Analysis - Inflation Rate**  
**Hazardous Members**  
(Dollar amounts expressed in thousands)

(1)	Decrease Inflation Rate (2)	Valuation Results (3)	Increase Inflation Rate (4)
Payroll Growth Rate	1.75%	2.00%	2.25%
Inflation Rate	2.05%	2.30%	2.55%
Discount Rate - Retirement	6.00%	6.25%	6.50%
Discount Rate - Insurance	6.00%	6.25%	6.50%
<b>Retirement</b>			
Actuarial Accrued Liability	\$ 6,023,051	\$ 5,861,691	\$ 5,708,052
Actuarial Value of Assets	2,788,714	2,788,714	2,788,714
Unfunded Actuarial Accrued Liability	3,234,337	3,072,977	2,919,338
Funded Ratio	46.3%	47.6%	48.9%
Actuarially Determined Contribution Rate	43.80%	41.11%	38.56%
<b>Insurance</b>			
Actuarial Accrued Liability	\$ 1,550,940	\$ 1,538,131	\$ 1,526,161
Actuarial Value of Assets	1,553,761	1,553,761	1,553,761
Unfunded Actuarial Accrued Liability	(2,821)	(15,630)	(27,600)
Funded Ratio	100.2%	101.0%	101.8%
Actuarially Determined Contribution Rate	2.92%	2.58%	2.27%
<b>Combined</b>			
Actuarial Accrued Liability	\$ 7,573,991	\$ 7,399,822	\$ 7,234,213
Actuarial Value of Assets	4,342,475	4,342,475	4,342,475
Unfunded Actuarial Accrued Liability	3,231,516	3,057,347	2,891,738
Funded Ratio	57.3%	58.7%	60.0%
Actuarially Determined Contribution Rate	46.72%	43.69%	40.83%



**Sensitivity Analysis - Payroll Growth**  
**Hazardous Members**  
(Dollar amounts expressed in thousands)

(1)	Decrease Payroll Growth (2)	Valuation Results (3)	Increase Payroll Growth (4)
Payroll Growth Rate	1.00%	2.00%	3.00%
Inflation Rate	2.30%	2.30%	2.30%
Discount Rate - Retirement	6.25%	6.25%	6.25%
Discount Rate - Insurance	6.25%	6.25%	6.25%

**Retirement**

Actuarial Accrued Liability	\$ 5,861,691	\$ 5,861,691	\$ 5,861,691
Actuarial Value of Assets	2,788,714	2,788,714	2,788,714
Unfunded Actuarial Accrued Liability	3,072,977	3,072,977	3,072,977
Funded Ratio	47.6%	47.6%	47.6%
Actuarially Determined Contribution Rate	44.58%	41.11%	37.88%

**Insurance**

Actuarial Accrued Liability	\$ 1,538,131	\$ 1,538,131	\$ 1,538,131
Actuarial Value of Assets	1,553,761	1,553,761	1,553,761
Unfunded Actuarial Accrued Liability	(15,630)	(15,630)	(15,630)
Funded Ratio	101.0%	101.0%	101.0%
Actuarially Determined Contribution Rate	2.58%	2.58%	2.60%

**Combined**

Actuarial Accrued Liability	\$ 7,399,822	\$ 7,399,822	\$ 7,399,822
Actuarial Value of Assets	4,342,475	4,342,475	4,342,475
Unfunded Actuarial Accrued Liability	3,057,347	3,057,347	3,057,347
Funded Ratio	58.7%	58.7%	58.7%
Actuarially Determined Contribution Rate	47.16%	43.69%	40.48%



**Wilshire**

# Capital Market Return Assumptions Update

September 30, 2022

## Summary Changes for 3Q 2022

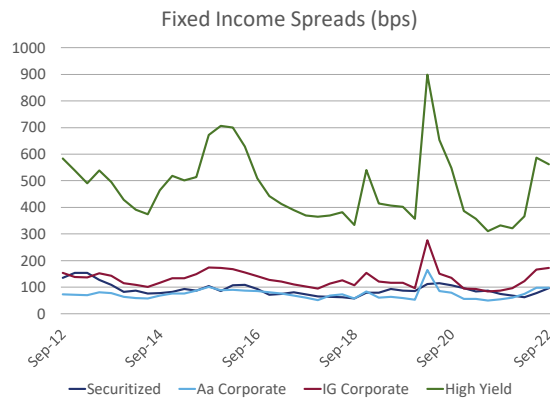
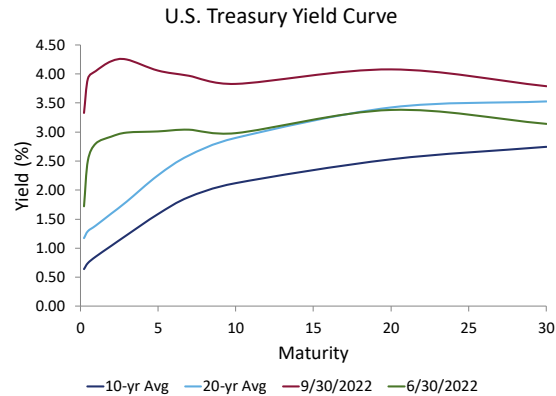
- Capital market return assumptions are updated on a quarterly basis for new asset allocation studies - the full assumption methodology is available in Wilshire's annual paper
- Yield curve up across all maturities although relatively flat with some modest inversions
  - Curve movements resulted in an 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 (%)			Risk (%)
	Jun 2022	Change	Sep 2022	
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



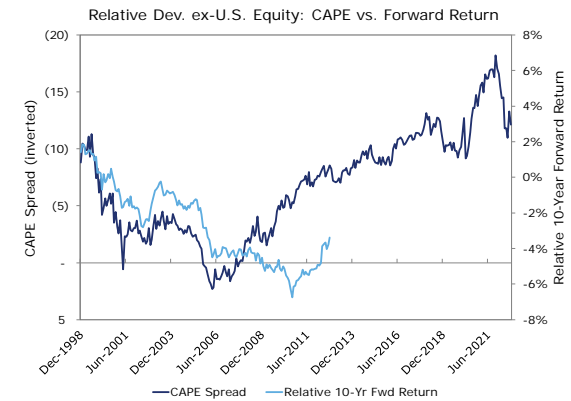
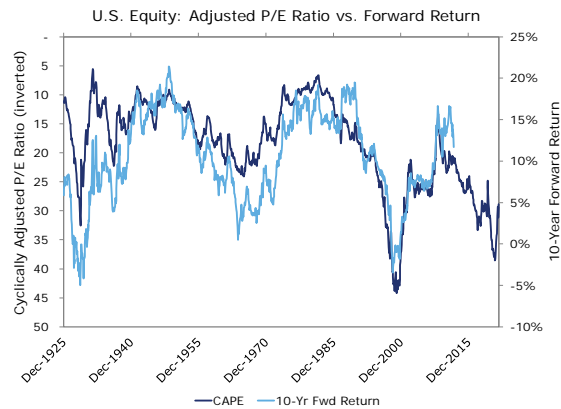
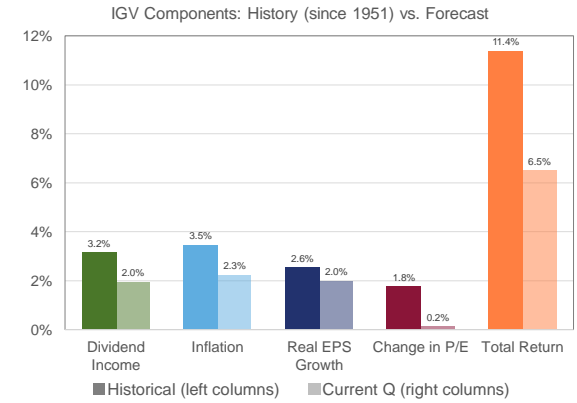
Fixed Income



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

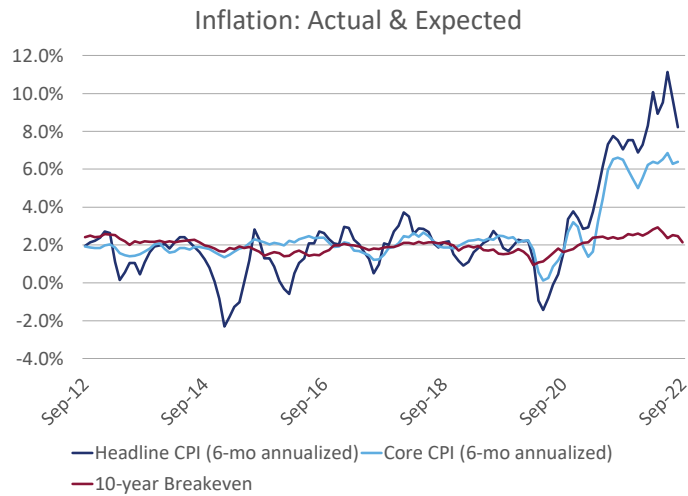
## Equity Markets

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
	<b>U.S. Equity Forecast</b>	<b>6.00</b>	<b>0.75</b>	<b>6.75</b>
	<b>Dev-ex-US Equity Forecast</b>	<b>7.00</b>	<b>0.50</b>	<b>7.50</b>
	<b>EM Equity Forecast</b>	<b>7.00</b>	<b>0.75</b>	<b>7.75</b>
Private	Cost of Debt (Public)	5.05	0.60	5.65
	Cost of Debt (Private)	7.10	0.50	7.60
<b>Private Market Basket Forecast</b>		<b>10.05</b>	<b>0.20</b>	<b>10.25</b>



## 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

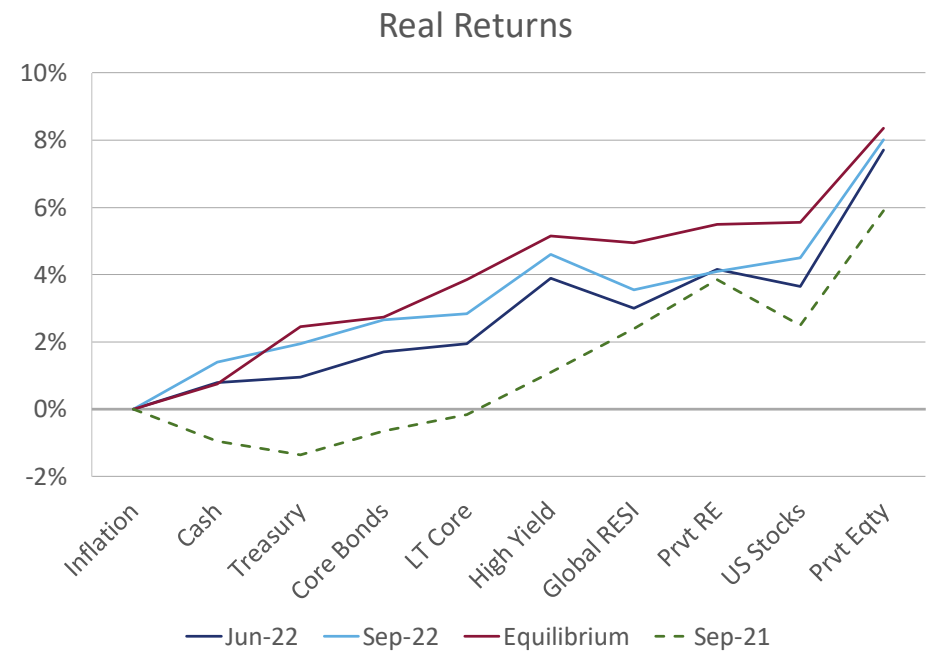
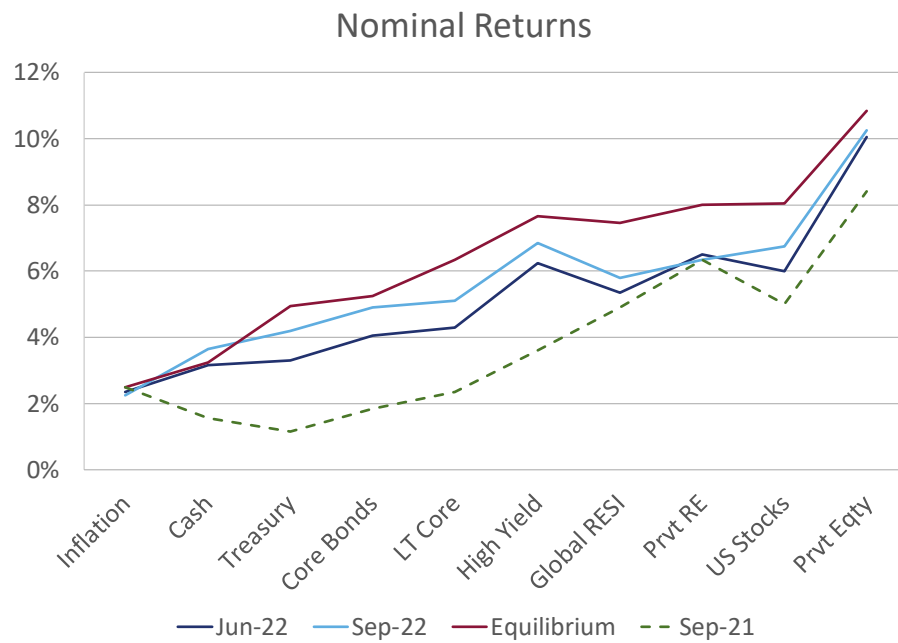


Asset Class Assumption	Total Return (%)			Risk (%)
	Jun 2022	Change	Sep 2022	
U.S. TIPS	3.15	0.90	4.05	6.00
Global RE Securities	5.35	0.45	5.80	16.45
Private Real Estate	6.50	-0.15	6.35	14.00
Commodities	5.50	0.40	5.90	16.00
Inflation	2.35	-0.10	2.25	1.75

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 Infrastructure 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

## Equilibrium Assumptions

### Current versus Equilibrium Asset Class Assumptions



CERS Policy

## CERS Capital Market Assumptions

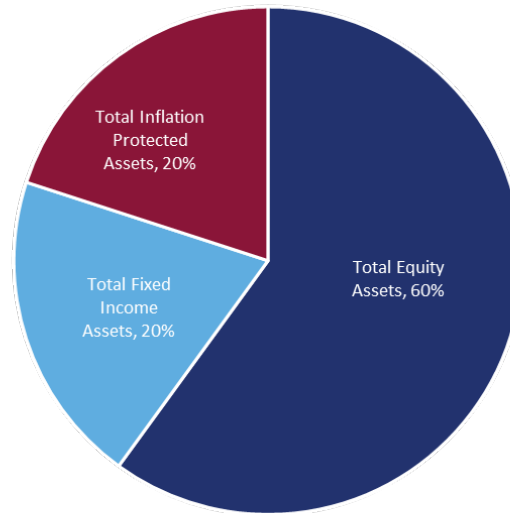
	Equity		Fixed Income			Inflation Protected	
	Public Equity	Private Equity	Core Fixed Income	Specialty Credit	Cash	Real Estate	Real Return
10-Yr Expected Return (%)	7.30	10.23	4.90	7.40	3.65	6.34	6.75
20-Yr Expected Return (%)	7.50	10.35	4.88	7.27	3.55	6.71	7.08
30-Yr Expected Return (%)	7.70	10.47	4.85	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
<b>Correlations</b>							
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).

### Current Policy

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



### 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%

## Important Information

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Ms. Pendergrass,

Please see attached for the requested analysis. The alternate funding scenario maintains the FY2023 contribution rates of 26.79% of pay and 49.59% of pay for the non-hazardous fund and hazardous fund, respectively, for five additional years (i.e. through FY2028). After FY2028 the non-hazardous contribution rate is allowed to reduce by a maximum of 0.5% of pay each year and the hazardous contribution rate is allowed to reduce by a maximum of 1.0% of pay each year (and never less than the actuarially determined rate). Due to the current funded status of the insurance fund, any budgeted contributions over the actuarially determined amount have been allocated to the pension fund.

Note, we have chosen different step-down percentages for the two funds because of the relative size of each contribution rate as a percentage of pay. However, the allowed 0.5% and 1.0% reductions can be adjusted based on the Board's and other Stakeholders' budgeting goals.

As shown in the attached exhibits, the contribution rates remain higher than under the current funding methods for approximately 15 years before reducing below current expected levels. Because of this additional funding, the unfunded liability in ten years is expected to be \$1.2 billion and \$0.5 billion less than currently expected for the non-hazardous pension fund and hazardous pension fund, respectively.

Since the actuarially determined contribution rates are projected to remain relatively level for years beyond FY 2024, there is no material difference from the current projection if the alternative funding strategy were to maintain the lower, FY 2024 employer contribution rate in future years. Stated another way, for this alternative funding policy to have a material financial impact in future years, the contribution rate maintained by the Board needs to be marginally higher than actuarially determined contribution rate. As previously discussed, it is our understanding that the changes proposed in this analysis would require statutory changes. Additionally, they assume no actuarial assumption changes and that investments return 6.25% annually, each year into the future. Any assumption changes or adverse investment experience could significantly alter the outcome of these projections.

Please let us know if you have any questions or would like to discuss further. Thank you,  
Danny and Janie

**Janie Shaw, ASA, EA, MAAA**

Gabriel, Roeder, Smith & Company  
Consultant

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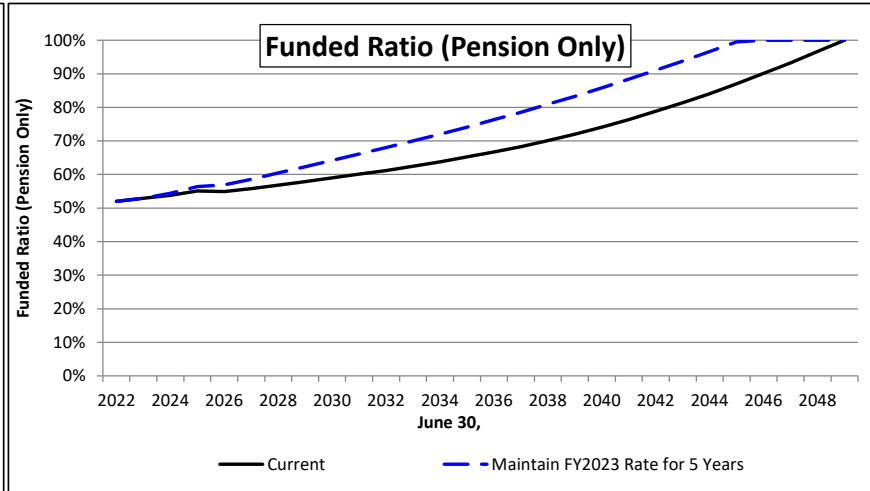
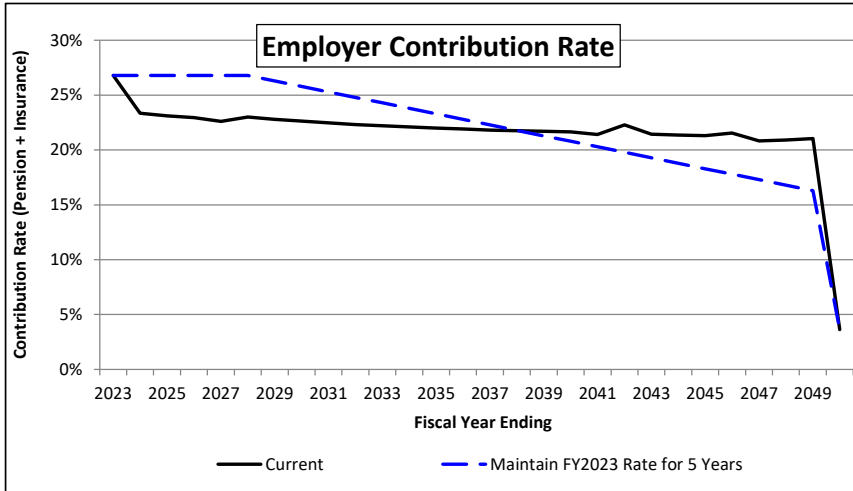
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**Kentucky Public Pensions Authority  
County Employees Retirement System (CERS) - Non-Hazardous  
Maintain FY2023 Contribution Rate for an Additional Five (5) Years and Reduce Rate by a Maximum of 0.50% of Pay Each Year Thereafter  
(\$ in Millions)**

June 30, (1)	Unfunded Actuarial Accrued Liability (Pension Fund Only)		Funded Ratio (Pension Fund Only)		FYE (6)	Employer Contributions (Pension & Insurance)		Employer Contribution Rate (Pension & Insurance)	
	Current (2)	Maintain FY2023 Rate for 5 Years (3)	Current (4)	Maintain FY2023 Rate for 5 Years (5)		Current (7)	Maintain FY2023 Rate for 5 Years (8)	Current (9)	Maintain FY2023 Rate for 5 Years (10)
2022	\$ 7,525	\$ 7,525	52%	52%	2023	\$ 720	\$ 720	26.8%	26.8%
2023	7,551	7,551	53%	53%	2024	641	735	23.3%	26.8%
2024	7,552	7,454	54%	54%	2025	647	750	23.1%	26.8%
2025	7,464	7,255	55%	56%	2026	656	765	23.0%	26.8%
2026	7,631	7,295	55%	57%	2027	658	780	22.6%	26.8%
2027	7,584	7,101	56%	59%	2028	683	796	23.0%	26.8%
2028	7,506	6,877	57%	61%	2029	691	797	22.8%	26.3%
2029	7,413	6,636	58%	62%	2030	700	797	22.6%	25.8%
2030	7,304	6,377	59%	64%	2031	709	797	22.5%	25.3%
2031	7,178	6,101	60%	66%	2032	718	797	22.3%	24.8%
2032	7,033	5,808	61%	68%	2033	729	797	22.2%	24.3%



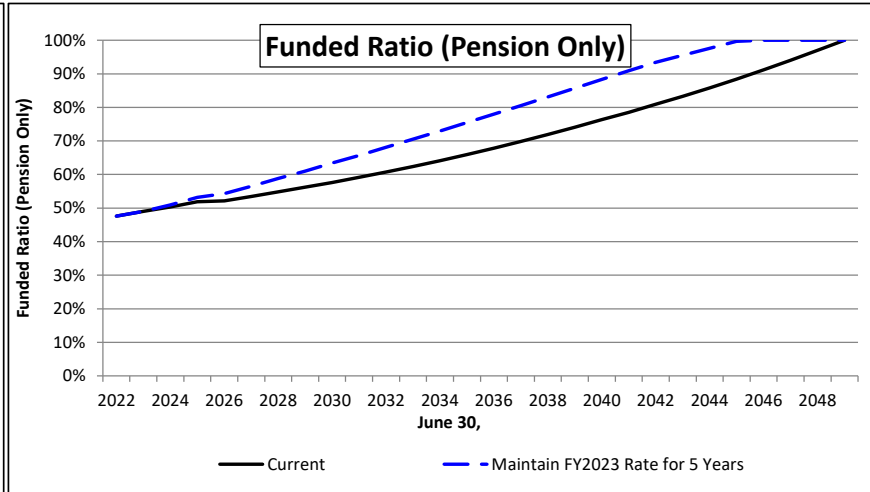
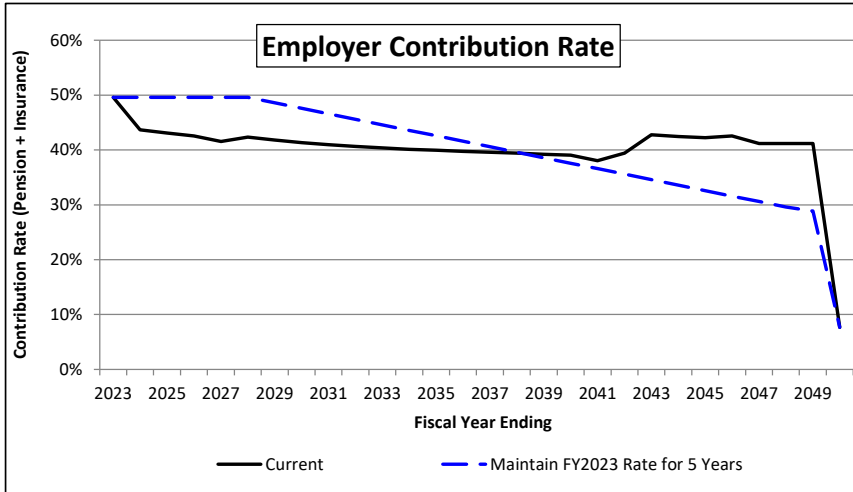
**Maintain FY 2023 Rate for 5 Years Scenario:**

The FY 2023 total contribution rate (pension + insurance) of 26.79% of pay is assumed to be maintained for an additional five years. After which, the total contribution rate is not reduced by more than 1% of pay in any given year. Additionally, the contribution rate is never less than the actuarially determined rate. Due to the current funded status of the insurance fund, any contributions over the actuarially determined amount have been allocated to the pension fund.



**Kentucky Public Pensions Authority  
County Employees Retirement System (CERS) - Hazardous  
Maintain FY2023 Contribution Rate for an Additional Five (5) Years and Reduce Rate by a Maximum of 1.00% of Pay Each Year Thereafter  
(\$ in Millions)**

June 30, (1)	Unfunded Actuarial Accrued Liability <i>(Pension Fund Only)</i>		Funded Ratio <i>(Pension Fund Only)</i>		FYE (6)	Employer Contributions <i>(Pension &amp; Insurance)</i>		Employer Contribution Rate <i>(Pension &amp; Insurance)</i>	
	Maintain FY2023 Rate for 5 Years		Maintain FY2023 Rate for 5 Years			Maintain FY2023 Rate for 5 Years		Maintain FY2023 Rate for 5 Years	
	Current (2)	(3)	Current (4)	(5)		Current (7)	(8)	Current (9)	(10)
2022	\$ 3,073	\$ 3,073	48%	48%	2023	\$ 308	\$ 308	49.6%	49.6%
2023	3,072	3,072	49%	49%	2024	276	314	43.7%	49.6%
2024	3,071	3,033	50%	51%	2025	278	321	43.1%	49.6%
2025	3,040	2,955	52%	53%	2026	280	326	42.6%	49.6%
2026	3,092	2,954	52%	54%	2027	279	333	41.6%	49.6%
2027	3,069	2,868	53%	57%	2028	290	340	42.3%	49.6%
2028	3,035	2,769	55%	59%	2029	292	340	41.8%	48.6%
2029	2,995	2,664	56%	61%	2030	295	339	41.3%	47.6%
2030	2,947	2,549	58%	63%	2031	298	339	41.0%	46.6%
2031	2,892	2,427	59%	66%	2032	302	339	40.6%	45.6%
2032	2,831	2,299	61%	68%	2033	305	337	40.4%	44.6%



**Maintain FY 2023 Rate for 5 Years Scenario:**

The FY 2023 total contribution rate (pension + insurance) of 49.59% of pay is assumed to be maintained for an additional five years. After which, the total contribution rate is not reduced by more than 1% of pay in any given year. Additionally, the contribution rate is never less than the actuarially determined rate. Due to the current funded status of the insurance fund, any contributions over the actuarially determined amount have been allocated to the pension fund.

