

Teachers' Retirement System of the State of Kentucky
Retirement Annuity Trust
Quarterly Investment Performance
Net of Management Fee Returns
For the Period Ended December 31, 2022

FINAL

	<u>Market Value</u>	<u>Last Qtr</u>	<u>FYTD</u>	<u>1-Year</u>	<u>3-Year*</u>	<u>5-Year*</u>	<u>10-Year*</u>	<u>20-Year*</u>
TOTAL PLAN	\$ 22,517,331,999.02	6.21	1.82	-13.11	4.85	5.88	8.09	7.19
<i>Policy Benchmark</i>		7.02	1.76	-12.85	4.98	6.06	8.07	-
<u>Total Equity</u>	\$ 12,986,806,845.24	10.47	3.85	-19.54	4.97	6.23	-	-
<u>Domestic Equity</u>	\$ 8,810,569,982.97	8.03	3.57	-19.62	6.98	8.38	-	-
<i>S&P 1500 Index</i>		7.79	2.66	-17.78	7.59	9.15	-	-
<u>All-Cap Equities</u>	\$ 496,975,282.84							
<i>Russell 3000 Index</i>		7.18	2.40	-19.21	7.07	8.79	-	-
Fort Washington Focused Equity	\$ 496,975,282.84	7.22	3.15	-18.00	9.97	10.83	-	-
<u>Large-Cap Equities</u>	\$ 7,144,935,383.64	7.92	3.33	-19.89	7.20	8.72	-	-
<i>S&P 500 Index</i>		7.56	2.31	-18.11	7.66	9.42	-	-
Todd Asset Large Cap Intrinsic Value	\$ 1,194,974,895.23	12.16	7.08	-9.38	9.66	8.09	-	-
S&P 500 Stock Index	\$ 2,457,805,175.32	7.57	2.18	-18.01	8.03	9.79	-	-
UBS Value Oriented (Global)	\$ 807,962,843.53	9.81	5.06	-16.90	9.14	9.23	-	-
State Street US Premier Growth Equity	\$ 768,557,964.28	2.91	-2.96	-29.80	6.09	10.02	-	-
Todd Asset Intrinsic Value Opportunity (Alpha)	\$ 598,516,068.43	13.34	11.83	-4.07	10.48	9.12	-	-
UBS Alpha Collective	\$ 357,614,576.34	8.76	4.28	-23.85	5.51	7.98	-	-
Wellington Large Cap Equity	\$ 712,742,099.35	6.07	1.34	-20.56	6.75	9.92	-	-
Baillie Gifford US Equity Growth	\$ 246,761,761.16	-4.86	-2.13	-55.23	-	-	-	-
<u>Mid-Cap Equities</u>	\$ 703,832,357.01	9.97	6.12	-18.91	4.23	5.90	-	-
<i>S&P 400 Index</i>		10.78	8.05	-13.06	7.23	6.71	-	-
S&P 400 Stock Index	\$ 293,209,553.26	10.72	8.11	-12.82	7.56	6.84	-	-
Wellington Mid Cap Equity	\$ 410,622,803.75	9.43	4.74	-22.91	2.12	5.67	-	-
<u>Small-Cap Equities</u>	\$ 464,826,959.48	7.76	3.94	-18.24	4.66	5.34	-	-
<i>S&P 600 Index</i>		9.19	3.51	-16.10	5.80	5.88	-	-
Wellington Small Cap Equity	\$ 207,900,672.55	6.14	4.06	-21.23	2.75	4.33	-	-
S&P 600 Stock Index	\$ 256,926,286.93	9.12	3.84	-15.63	6.35	6.12	-	-

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<u>International Equity</u>								
<i>MSCI AC World Ex US</i>	\$ 4,176,236,862.27	16.00	4.49	-19.40	0.90	2.13	-	-
		<i>14.37</i>	<i>3.16</i>	<i>-15.57</i>	<i>0.53</i>	<i>1.36</i>	-	-
Todd Asset International Intrinsic Value	\$ 852,291,416.79	18.09	7.28	-10.91	3.42	3.15	-	-
Baillie Gifford International	\$ 1,023,997,142.42	13.10	1.25	-34.33	-1.01	1.99	-	-
UBS All Country World Ex US Equity	\$ 995,364,223.96	17.63	5.00	-13.66	0.87	2.10	-	-
Barings All Country World Ex US	\$ 680,740,401.00	16.44	5.82	-12.78	0.08	1.64	-	-
Black Rock MSCI ACWI Ex US IMI Index	\$ 534,518,966.30	14.20	3.18	-16.30	0.66	1.26	-	-
Todd Asset International Intrinsic Value Opportunity	\$ 89,324,711.80	19.82	8.31	-4.50	2.70	1.19	-	-
<u>Fixed Income</u>								
<i>Bloomberg Barclays Govt/Credit Index</i>	\$ 3,276,342,322.70	1.66	-2.74	-13.05	-2.06	0.61	-	-
		<i>1.80</i>	<i>-2.84</i>	<i>-13.58</i>	<i>-2.57</i>	<i>0.21</i>	-	-
<u>Intermediate</u>								
<i>Bloomberg Barclays Intermediate Govt/Credit Index</i>		<i>1.54</i>	<i>-1.57</i>	<i>-8.24</i>	<i>-1.26</i>	<i>0.73</i>	-	-
Intermediate Bond	\$ 484,462,407.86	1.40	-0.69	-6.53	-0.60	1.14	-	-
<u>Broad</u>								
<i>Bloomberg Barclays Govt/Credit Index</i>		<i>1.80</i>	<i>-2.84</i>	<i>-13.58</i>	<i>-2.57</i>	<i>0.21</i>	-	-
Fort Washington Core Fixed Income	\$ 574,462,819.91	2.96	-2.03	-13.79	-2.17	0.63	-	-
Internal Bond	\$ 153,899,414.43	1.03	-2.85	-11.24	-1.46	1.06	-	-
Broad Market Bond	\$ 797,929,492.22	1.19	-2.70	-12.10	-2.09	0.53	-	-
403(b) Tax-Sheltered Trust	\$ 306,182.35	0.87	1.37	1.54	0.65	1.15	-	-
Galliard Capital Management Core Fixed Income	\$ 561,053,132.82	2.11	-2.84	-13.87	-2.48	0.46	-	-
<u>Long</u>								
<i>Hybrid Index</i>		<i>2.08</i>	<i>-4.16</i>	<i>-18.46</i>	<i>-3.78</i>	<i>-0.23</i>	-	-
Long Term Bond	\$ 704,228,873.11	1.10	-4.53	-16.98	-2.57	0.42	-	-

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<u>Real Estate</u>	\$ 1,855,581,771.52	0.69	3.28	15.89	11.58	9.91	-	-
In House Real Estate Equity	\$ 402,120,071.65	1.40	2.67	4.45	4.70	5.49	-	-
<i>CPI plus 2%</i>		0.95	1.95	8.55	7.00	5.84	-	-
<u>Core Real Estate</u>	\$ 956,813,307.99	1.55	5.67	20.96	13.43	10.97	-	-
<i>NCREIF ODCE (VW) Index</i>		-4.97	-4.47	7.47	9.93	8.68	-	-
Prudential PRISA	\$ 516,924,047.95	0.04	5.63	19.07	11.72	9.82	-	-
Carlyle Property Investors	\$ 199,050,084.00	5.92	-0.47	17.18	15.60	12.38	-	-
TA Realty Core Property	\$ 240,839,176.04	1.38	6.75	24.93	16.24	-	-	-
<u>Non-Core Real Estate</u>	\$ 496,648,391.88	-1.53	-0.37	18.01	14.88	12.26	-	-
<i>NCREIF Property Index</i>		-3.50	-2.95	5.52	8.06	7.46	-	-
Carlyle Realty Partners VI	\$ 4,220,389.00	1.17	-1.88	4.23	-5.84	-6.27	-	-
Blackstone Partners VII	\$ 11,002,573.37	-3.23	-1.93	6.95	5.85	7.19	-	-
Rockwood Capital Real Estate Partners IX	\$ 9,032,146.95	1.30	0.17	3.31	-6.47	-2.98	-	-
The Realty Associates X	\$ 43,472.00	15.83	23.58	52.65	14.17	16.04	-	-
Angelo Gordon Net Lease Realty III	\$ 43,947,620.00	1.52	3.83	9.36	7.65	7.77	-	-
Carlyle Realty Partners VII	\$ 12,223,682.00	-0.02	-1.40	6.82	7.26	10.99	-	-
Landmark Real Estate Partners VII	\$ 8,461,815.72	-5.14	-4.29	-1.74	-2.16	-0.83	-	-
Blackstone Partners VIII	\$ 40,626,949.19	-0.39	-1.98	25.93	24.21	19.46	-	-
The Realty Associates XI	\$ 33,287,242.00	-18.79	-19.20	4.51	17.50	14.69	-	-
Rockwood Capital Real Estate Partners X	\$ 32,799,199.54	-0.53	-2.11	7.38	12.43	9.79	-	-
Landmark Real Estate Partners VIII	\$ 26,692,774.73	4.73	12.89	30.84	19.85	7.32	-	-
Carlyle Realty Partners VIII	\$ 31,650,947.00	7.04	10.38	64.97	43.81	-6.41	-	-
Blackstone Partners IX	\$ 57,333,064.48	-0.66	-1.37	34.77	28.50	-	-	-
Angelo Gordon Net Lease Realty IV	\$ 36,989,666.00	1.90	4.07	6.80	7.23	-	-	-
Rockwood Capital Real Estate Partners XI	\$ 67,007,769.90	1.23	3.17	10.47	-	-	-	-
The Realty Associates XII	\$ 74,951,129.00	-3.65	-0.61	25.49	-	-	-	-
Carlyle Realty Partners IX	\$ 1,827,951.00	-	-	-	-	-	-	-
Angelo Gordon Realty Value XI	\$ 4,550,000.00	-	-	-	-	-	-	-

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<u>Alternative Investments</u>								
<u>Private Equity</u>	\$ 1,818,674,072.34	-0.81	-2.07	4.70	16.62	14.09	-	-
<u>Mature Private Equity</u>	\$ 978,877,250.14	-0.70	-1.42	6.88	15.88	12.94	-	-
<i>S&P 500 Index plus 3%</i>		<i>8.36</i>	<i>3.83</i>	<i>-15.65</i>	<i>10.89</i>	<i>12.71</i>	-	-
KKR 2006	\$ 73,180.00	10.80	0.43	-4.30	6.77	14.00	-	-
KKR European III	\$ 1,616,664.00	-19.80	-27.90	-48.09	-20.03	-9.27	-	-
Riverstone/Carlyle Energy and Power IV	\$ 82,741.00	-6.76	-13.91	63.12	28.15	9.83	-	-
Alinda Infrastructure II	\$ 118,962.00	-6.68	-14.02	-11.76	-10.80	-9.68	-	-
Capital South Partners III	\$ 954,822.43	2.63	1.25	4.43	12.04	8.88	-	-
Landmark Equity Partners XIV	\$ 2,301,871.43	-2.82	-2.99	-7.82	6.02	3.92	-	-
Lexington Capital Partners VII	\$ 4,073,047.00	-3.74	-6.12	-1.65	14.52	12.12	-	-
Stepstone Pioneer Capital III	\$ 7,321,741.00	-1.97	-8.07	-5.47	11.35	11.12	-	-
Oaktree Mezzanine III	\$ 196,638.00	18.52	26.70	21.63	28.48	31.43	-	-
JP Morgan Global Maritime	\$ 36,113,925.22	-1.40	5.78	20.50	26.22	14.58	-	-
Audax Mezzanine III	\$ 1,415,846.00	13.47	14.49	68.78	29.16	24.08	-	-
Hellman & Friedman Capital Partners VII	\$ 9,635,417.00	1.39	-7.99	-4.23	23.21	25.89	-	-
Oaktree European Principal III	\$ 8,948,168.00	-4.50	-11.96	-11.86	-4.14	-0.83	-	-
NGP Natural Resources X	\$ 7,094,784.00	11.30	27.79	46.05	-1.22	-6.89	-	-
Riverstone Energy and Power V	\$ 9,876,911.00	4.03	8.70	28.36	-5.66	-12.58	-	-
APAX VIII	\$ 8,990,997.37	-11.02	-17.44	-37.18	1.17	8.09	-	-
Actis Global IV	\$ 31,347,860.00	-5.10	-5.13	-1.86	5.77	8.55	-	-
Audax PE IV	\$ 83,466.00	-22.16	-23.18	-	-	-	-	-
Landmark Equity Partners XV	\$ 6,497,482.35	-16.03	-10.93	-12.95	7.65	9.75	-	-
Fort Washington VIII	\$ 27,436,871.00	-2.53	-4.91	1.96	21.11	18.39	-	-
Public Pension Capital	\$ 164,399,618.31	0.78	4.81	18.56	25.74	29.09	-	-
NGP Natural Resources XI	\$ 40,482,555.00	9.28	26.57	61.29	17.53	10.49	-	-
Gavea Investments V	\$ 4,640,654.33	10.91	-24.59	-40.51	75.97	42.37	-	-
Oaktree Mezzanine IV	\$ 4,833,390.00	0.05	3.10	13.26	10.54	9.58	-	-
Lexington Capital Partners VIII	\$ 22,067,880.00	-5.38	-7.77	0.14	17.20	15.54	-	-
KKR European IV	\$ 32,638,638.00	-2.89	-6.63	-3.14	15.78	17.65	-	-
IFM Global Infrastructure	\$ 227,700,008.82	2.70	3.07	7.75	10.15	11.71	-	-
Carlyle Europe Partners IV	\$ 18,414,844.00	1.88	-3.75	3.91	24.41	16.11	-	-
Audax PE V	\$ 19,209,911.56	0.17	6.24	48.73	46.45	31.66	-	-
Fort Washington IX	\$ 40,909,287.00	-2.02	0.85	18.84	23.82	17.60	-	-
Fort Washington IX-K	\$ 41,017,227.00	-2.63	-0.65	15.86	24.15	16.02	-	-
Hellman & Friedman Capital Partners VIII	\$ 61,389,892.00	-11.79	-22.26	-25.72	14.35	12.82	-	-
Riverstone Energy and Power VI	\$ 34,028,899.00	6.48	7.24	32.71	5.31	-6.73	-	-
Audax Mezzanine IV	\$ 8,756,329.12	4.53	7.43	15.29	13.60	11.30	-	-

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JP Morgan Global Maritime II	\$ 1.00	-38.68	-56.15	-50.98	-12.01	-5.57	-	-
APAX IX	\$ 48,869,746.20	-1.16	-12.64	-24.10	19.47	21.93	-	-
Oaktree European Principal IV	\$ 45,336,974.00	-5.24	-10.09	-8.40	7.15	9.45	-	-
<u>Private Equity < 5 Years</u>	\$ 839,796,822.20	-0.54	-2.33	4.30	19.97	16.43	-	-
KKR Americas XII	\$ 61,530,107.00	-6.16	-16.16	-15.91	24.15	-	-	-
NGP Natural Resources XII	\$ 40,848,030.00	9.68	23.80	52.63	19.68	-	-	-
JP Morgan Global Transport Income	\$ 77,106,273.98	1.58	3.83	10.81	8.95	-	-	-
APAX Digital	\$ 50,823,732.21	0.40	-10.28	-12.70	31.45	-	-	-
Landmark Equity Partners XVI	\$ 28,648,770.79	-6.52	-4.83	14.26	22.80	-	-	-
Carlyle Asia Partners V	\$ 31,877,908.00	-3.91	-8.21	-4.94	10.49	-	-	-
Carlyle Europe Partners V	\$ 25,043,933.00	-3.13	-9.90	-5.17	4.67	-	-	-
Fort Washington X	\$ 26,635,350.00	2.62	6.72	11.89	24.55	-	-	-
Audax PE VI-A	\$ 46,598,713.30	2.93	11.63	47.94	52.85	-	-	-
Fort Washington X-S	\$ 20,319,718.00	4.67	9.84	16.57	21.23	-	-	-
Oaktree Mezzanine V	\$ 31,780,623.00	1.26	2.61	29.80	14.18	-	-	-
Lexington Capital Partners IX	\$ 49,756,559.00	-4.68	-4.97	9.55	18.63	-	-	-
Oaktree European Principal V	\$ 44,421,192.00	0.22	-0.84	25.40	16.48	-	-	-
KKR European V	\$ 43,112,354.00	-0.66	-11.67	-2.72	2.88	-	-	-
APAX X	\$ 41,964,197.63	-2.99	-1.58	9.67	-	-	-	-
AlpInvest Secondaries VII	\$ 19,564,195.06	4.65	5.16	29.02	-	-	-	-
Carlyle Renewable and Sustainable Energy	\$ 44,731,296.00	4.11	3.48	11.18	-	-	-	-
Fort Washington PE Opportunities IV	\$ 17,082,479.00	-4.54	-6.92	-6.98	-	-	-	-
Fort Washington PE Opportunities IV-K	\$ 20,049,304.00	-4.42	-6.71	-5.46	-	-	-	-
AlpInvest Co-Investment VIII	\$ 24,169,111.03	-1.45	2.52	5.24	-	-	-	-
Silver Lake Alpine II	\$ 20,314,939.00	-0.56	-3.94	-0.07	-	-	-	-
Baillie Gifford Private Companies II	\$ 18,931,183.29	-3.06	-8.42	-11.65	-	-	-	-
KKR Health II	\$ 2,835,182.00	-8.26	12.06	-	-	-	-	-
Audax Mezzanine V	\$ 7,962,212.79	2.78	16.07	-	-	-	-	-
NGP ETP IV	\$ 4,546,805.00	-100.00	-	-	-	-	-	-
Manulife Cropland Plus	\$ 13,576,909.00	-1.27	-	-	-	-	-	-
APAX Credit Opportunities	\$ 2,994,838.65	-8.61	-	-	-	-	-	-
APAX Digital II	\$ 532,467.43	-	-	-	-	-	-	-
Carlyle Renewable and Sustainable Energy II	\$ 13,531,082.00	-	-	-	-	-	-	-
Fort Washington XI-K	\$ 2,000,000.00	-	-	-	-	-	-	-
Fort Washington II-K	\$ 2,660,000.00	-	-	-	-	-	-	-
Landmark Equity Partners XVII	\$ 3,847,356.04	-	-	-	-	-	-	-

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<u>Timberland</u>	\$ 476,264,803.97	0.07	0.53	7.30	1.76	0.13	-	-
<i>NCREIF Timberland Index</i>		<i>4.89</i>	<i>7.39</i>	<i>12.90</i>	<i>7.51</i>	<i>5.37</i>	-	-
Molpus Lake Superior Timberlands (Michigan)	\$ 82,596,708.50	0.38	0.99	12.64	-0.60	-1.92	-	-
Molpus Lake Superior Timberlands (Hiwassee)	\$ 8,894,186.63	2.27	2.61	0.73	0.77	0.05	-	-
Molpus Seven States	\$ 46,432,114.21	1.96	2.66	5.51	2.33	0.35	-	-
Molpus Lake Superior Timberlands (Magnolia)	\$ 69,718,489.40	-0.07	1.19	3.16	-	-	-	-
Molpus Lake Superior Timberlands (Toledo)	\$ 268,623,305.23	-0.39	-0.20	-	-	-	-	-
<u>Additional Categories</u>	\$ 1,966,943,943.38	1.98	0.09	-6.17	2.47	3.53	-	-
<i>B of A Merrill Lynch U.S. High Yield Master II Index</i>		<i>3.97</i>	<i>3.26</i>	<i>-11.24</i>	<i>-0.28</i>	<i>2.09</i>	-	-
<u>Evergreen Funds</u>								
Fort Washington High Yield Bond	\$ 274,801,129.23	4.90	4.33	-10.23	-0.56	2.04	-	-
Marathon TRS Credit	\$ 570,660,058.77	-1.89	-7.10	-7.44	3.74	2.75	-	-
Shenkman Capital Management	\$ 320,116,963.82	3.06	4.04	-1.73	1.67	3.07	-	-
Barings Capital European Loan	\$ 89,310,000.00	-0.01	0.09	-6.10	2.24	3.45	-	-
Columbia High Yield Bond	\$ 191,031,980.20	4.14	4.02	-10.16	0.04	2.46	-	-
Lord Abbett High Yield Bond	\$ 94,685,718.12	3.60	2.90	-12.24	-1.40	-	-	-
In House High Yield Bond	\$ 183,354,418.82	5.04	4.72	-8.49	-	-	-	-
Deerpath Direct Lending	\$ 60,000,000.00	-	-	-	-	-	-	-
<u>Non-Evergreen Funds</u>								
Avenue Special Situations VI	\$ 11,049,646.00	-0.85	-1.65	-3.93	17.02	12.42	-	-
Oaktree Opportunities IX	\$ 38,293,591.00	4.63	10.19	24.53	17.79	12.87	-	-
Highbridge Specialty Loan III	\$ 741,725.69	-2.44	-1.20	-5.97	-5.98	-2.34	-	-
Oaktree European Dislocation	\$ 414,083.00	-7.24	-30.71	-67.15	-43.72	-31.98	-	-
Marathon European Credit Opportunities II	\$ 3,513,833.52	83.03	11.13	6.66	2.25	5.59	-	-
Oaktree Opportunities X	\$ 16,037,604.00	0.84	4.12	9.70	8.56	7.42	-	-
Oaktree European Capital Solutions	\$ 15,174,695.00	-7.31	-11.09	-11.72	4.76	5.65	-	-
Marathon European Credit Opportunities III	\$ 49,424,660.21	4.48	-1.76	3.04	5.86	8.74	-	-
Oaktree Opportunities Xb	\$ 48,333,836.00	2.52	3.27	12.37	15.47	-	-	-
<u>Short Term</u>								
Cash (Unallocated)	\$ 136,718,239.87	0.88	1.37	1.71	0.70	1.24	-	-
<i>90 Day T-Bill</i>		<i>0.84</i>	<i>1.31</i>	<i>1.46</i>	<i>0.72</i>	<i>1.26</i>	-	-

*Returns are annualized for periods longer than one year

** Prior to July 1, 2008, TRS did not benchmark overall fund performance. Effective July 1, 2008, the Board of Trustees approved a Policy Index that represents the returns of appropriate benchmarks for the various asset classes weighted by the mid-point of the strategic range for the current fiscal year.