



# Teachers' Retirement System of the State of Kentucky

## Public Pension Oversight Board

**Aug. 24, 2020**

**Gary L. Harbin, CPA**  
Executive Secretary

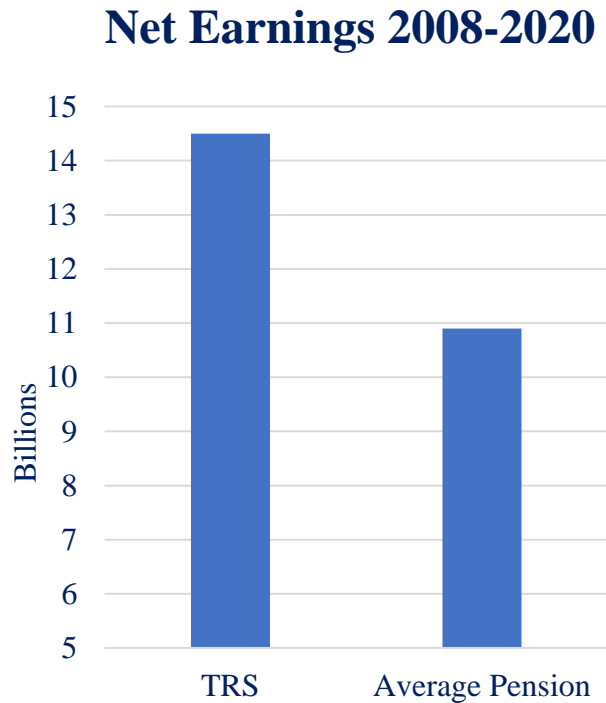
# Investment Performance

Retirement Annuity Trust Returns as of June 30, 2020 (preliminary and unaudited)

|                     | <b>Quarter</b> | <b>1-year</b> | <b>3-year</b> | <b>5-year</b> | <b>10-year</b> | <b>20-year</b> |
|---------------------|----------------|---------------|---------------|---------------|----------------|----------------|
| Gross               | 14.48%         | 5.8%          | 7.48%         | 7.23%         | 9.59%          | 6.09%          |
| <i>Benchmark</i>    | 13.3%          | 4.23%         | 6.97%         | 7.21%         | 9.25%          | N/A            |
| <i>TRS Aon Rank</i> | Top 5%         | Top 5%        | Top 4%        | Top 7%        | Top 3%         | N/A            |
| Net                 | 14.31%         | 5.5%          | 7.18%         | 6.93%         | 9.34%          | 5.93%          |

30-year compounded gross return  
**7.98%**

# Investment Performance



From 2008 to June 2020, TRS investment returns totaled a net \$14.5 billion, compared to the average plan's \$10.9 billion.

This outperformance generated \$3.6 billion to the benefit of Kentucky's teachers.

# Cash Flow Update

## Retirement Annuity Trust – Preliminary and Unaudited

|  | FY 2020            | FY 2019            |
|--|--------------------|--------------------|
| <b>Cash Inflows</b>                                  |                    |                    |
| Member contributions                                 | \$ 321,100,000     | \$ 321,200,000     |
| Employer contributions/appropriations                | 1,115,400,000      | 1,123,000,000      |
| Investment income (Net of any asset gains/losses)    | <u>381,300,000</u> | <u>433,700,000</u> |
| <b>Total Cash Inflows</b>                            | 1,817,800,000      | 1,877,900,000      |
| <b>Cash Outflows</b>                                 |                    |                    |
| Benefit payments/refunds                             | 2,195,700,000      | 2,126,800,000      |
| Administrative expense                               | <u>13,600,000</u>  | <u>12,300,000</u>  |
| <b>Total Outflows</b>                                | 2,209,300,000      | 2,139,100,000      |
| Net cash flow before asset gain/(losses)*            | (391,500,000)      | (261,200,000)      |
| Investment gains or losses (realized and unrealized) | 723,200,000        | 651,487,000        |
| Net plan assets                                      |                    |                    |
| Beginning of fiscal year                             | \$ 20,371,900,000  | \$ 19,981,600,000  |
| At end of period                                     | \$ 20,702,800,000  | \$ 20,371,900,000  |

\*Appreciation/depreciation in fair value does not generate cash inflows or outflows.

# Cash Flow Update

## Health Insurance Trust – Preliminary and Unaudited

|  | FY 2020           | FY 2020           |
|--|-------------------|-------------------|
| <b>Cash Inflows</b>                                  |                   |                   |
| Member contributions                                 | \$ 191,200,000    | \$ 189,400,000    |
| Employer contributions/appropriations                | 183,700,000       | 183,100,000       |
| Recovery income                                      | 96,600,000        | 84,300,000        |
| Investment income (net of any asset gains/losses)    | <u>13,000,000</u> | <u>10,500,000</u> |
| <b>Total Cash Inflows</b>                            | 484,500,000       | 467,300,000       |
| <b>Cash Outflows</b>                                 |                   |                   |
| Benefit payments/refunds                             | 302,500,000       | 307,600,000       |
| Administrative expense                               | <u>0</u>          | <u>0</u>          |
| <b>Total Cash Outflows</b>                           | 302,500,000       | 307,600,000       |
| Net cash flow before asset gain/(losses)*            | 182,000,000       | 159,700,000       |
| Investment gains or losses (realized and unrealized) | 19,300,000        | 63,800,000        |
| Net plan assets                                      |                   |                   |
| Beginning of fiscal year                             | \$ 1,414,000,000  | \$ 1,190,300,000  |
| At end of period                                     | \$ 1,615,300,000  | \$ 1,414,000,000  |

\*Appreciation/depreciation in Fair Value does not generate cash inflows or outflows.

# TRS's Continual Risk Evaluation

## Adjustments made in short and long terms

- Independent actuary performs stress test of TRS pension and health care plans on valuation and projection basis.
  - Actuary has added new Actuarial Standards of Practice (ASOP) 51 to its reports, reviewing investment risk on a one-year basis and demonstrating sensitivity analysis on the TRS investment return assumption. For projections, the actuary performs TRS funding forecasts on a deterministic basis, demonstrating contribution risk to the plan.
- Annually the actuary studies and reports on the actual experience compared to what was assumed. Differences each year addressed with layered amortization of liabilities over a 20-year period (aka the Montana approach). Since TRS adopted in 2014, differences have resulted in more actuarial gains than losses.
- TRS has an outside investment consultant periodically conduct asset liability modeling studies which reassess assumptions, risks, asset allocation and the likelihood of meeting assumptions to ensure that benefits will be paid.
- Every five years an experience study compares actuarial experience projected five years ago to the actual experience of those years. Next study will be for five years that ended June 30, 2020. (Study released in 2021 because it necessarily follows the annual actuarial valuation, which is completed in November, for the fifth year.)
- Full replication audit to review the TRS actuary conducted periodically by another actuarial firm, which examines, in part, assumptions and methodologies. Next: Fiscal year ending June 30, 2024.
- Governmental Accounting Standards Board (GASB) requires plans not receiving full employer contributions to use a lower assumed rate of return, with an insolvency date projection.

# 2019 Sensitivity Analysis

## Retirement Annuity Trust

|  | Investment Return Assumption |                         |                             |
|--|------------------------------|-------------------------|-----------------------------|
| Statistic/Scenario                       | <u>Decline 1%</u><br>6.50%   | <u>Current</u><br>7.50% | <u>Increase 1%</u><br>8.50% |
| Funding Level:                           | 52.1%                        | 58.1%                   | 64.3%                       |
| UAAL:                                    | \$ 18.5 B                    | \$ 14.5 B               | \$ 11.2 B                   |
| ADEC Change<br>(\$ dollars and % of pay) | ↑ \$314 M<br>8.6% of Pay     | -                       | ↓ \$274 M<br>(7.5)% of Pay  |

|  | Payroll (UAAL Payment) Growth Assumption |                              |                           |
|--|--|------------------------------|---------------------------|
|  | <u>Current</u><br>3.50%                  | <u>Decline 1.5%</u><br>2.00% | <u>No Growth</u><br>0.00% |
| Funding Level:                           | 58.1%                                    | 58.1%                        | 58.1%                     |
| UAAL:                                    | \$ 14.5 B                                | \$ 14.5 B                    | \$ 14.5 B                 |
| ADEC Change<br>(\$ dollars and % of pay) | -  | ↑ \$157 M<br>4.3% of Pay     | ↑ \$387 M<br>10.6% of Pay |

# Market Scenario Analysis

## Actuary Projected — Retirement Annuity Trust

|  | FY2021        | FY2022        | FY2025        | FY2030        | FY2040        | 20-year Total |
|--|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>CURRENT</b>   | \$1,167.3 M   | \$1,166.2 M   | \$1,263.6 M   | \$1,535.4 M   | \$2,351.3 M   | \$32,453.4 M  |
| <i>2019 Valuation Projections</i>  | 30.89% of Pay | 30.45% of Pay | 30.68% of Pay | 33.17% of Pay | 38.90% of Pay |               |
|  | 57.7% Funded  | 58.1% Funded  | 60.5% Funded  | 62.7% Funded  | 74.5% Funded  |               |
|  | \$14.3 B      | \$14.5 B      | \$14.6 B      | \$15.3 B      | \$12.4 B      |               |
| <b>POSITIVE Scenario</b>   | \$1,167.3 M   | \$1,166.2 M   | \$1,228.0 M   | \$1,398.4 M   | \$2,151.8 M   | \$30,175.3 M  |
| <i>Updated 2019 Valuation with Actual (FY20), 15% (FY21), and 7.5% for FY22 and beyond</i> | 30.89% of Pay | 30.45% of Pay | 29.82% of Pay | 30.21% of Pay | 35.60% of Pay |               |
|  | 57.7% Funded  | 58.1% Funded  | 61.7% Funded  | 66.5% Funded  | 76.7% Funded  |               |
|  | \$14.3 B      | \$14.5 B      | \$14.2 B      | \$13.8 B      | \$11.3 B      |               |
| <b>EXPECTED Scenario</b>   | \$1,167.3 M   | \$1,166.2 M   | \$1,283.8 M   | \$1,576.9 M   | \$2,411.5 M   | \$33,185.7 M  |
| <i>Updated 2019 Valuation with Actual (FY20), and 7.5% for FY21 and beyond</i>             | 30.89% of Pay | 30.45% of Pay | 31.17% of Pay | 34.07% of Pay | 39.90% of Pay |               |
|  | 57.7% Funded  | 58.1% Funded  | 59.8% Funded  | 61.6% Funded  | 74.0% Funded  |               |
|  | \$14.3 B      | \$14.5 B      | \$14.9 B      | \$15.8 B      | \$12.6 B      |               |
| <b>FLAT Scenario</b>   | \$1,167.3 M   | \$1,166.2 M   | \$1,339.6 M   | \$1,755.4 M   | \$2,671.2 M   | \$36,196.1 M  |
| <i>Updated 2019 Valuation w/ Actual (FY20), 0% (FY21), and 7.5% for FY22 and beyond</i>    | 30.89% of Pay | 30.45% of Pay | 32.53% of Pay | 37.92% of Pay | 44.19% of Pay |               |
|  | 57.7% Funded  | 58.1% Funded  | 57.9% Funded  | 56.7% Funded  | 71.2% Funded  |               |
|  | \$14.3 B      | \$14.5 B      | \$15.6 B      | \$17.8 B      | \$14.0 B      |               |
| <b>NEGATIVE Scenario</b>   | \$1,167.3 M   | \$1,166.2 M   | \$1,395.5 M   | \$1,933.9 M   | \$2,930.8 M   | \$39,206.6 M  |
| <i>Updated 2019 Valuation w/ Actual (FY20), -7.5% (FY21), and 7.5% for FY22 and beyond</i> | 30.89% of Pay | 30.45% of Pay | 33.88% of Pay | 41.78% of Pay | 48.49% of Pay |               |
|  | 57.7% Funded  | 58.1% Funded  | 55.9% Funded  | 51.8% Funded  | 68.4% Funded  |               |
|  | \$14.3 B      | \$14.5 B      | \$16.3 B      | \$19.8 B      | \$15.3 B      |               |



# 2019 Sensitivity Analysis

## Health Insurance Trust

| Statistic/Scenario                       | Investment Return Assumption |                |                           | Payroll (UAAL Payment) Growth Assumption |                         |                         |
|--|------------------------------|----------------|---------------------------|--|-------------------------|-------------------------|
|  | <u>Decline 1%</u>            | <u>Current</u> | <u>Increase 1%</u>        | <u>Current</u>                           | <u>Decline 1.5%</u>     | <u>No Growth</u>        |
|  | 7.00%                        | 8.00%          | 9.00%                     | 3.50%                                    | 2.00%                   | 0.00%                   |
| Funding Level:                           | 40.5%                        | 46.0%          | 51.9%                     | 46.0%                                    | 46.0%                   | 46.0%                   |
| UAAL:                                    | \$ 2.1 B                     | \$ 1.7 B       | \$ 1.3 B                  | \$ 1.7 B                                 | \$ 1.7 B                | \$ 1.7 B                |
| ADEC Change<br>(\$ dollars and % of pay) | ↑ \$38 M<br>1.0% of Pay      | -              | ↓ \$32 M<br>(0.9)% of Pay | -  | ↑ \$15 M<br>0.4% of Pay | ↑ \$37 M<br>1.0% of Pay |

# Market Scenario Analysis

## Actuary Projected — Health Insurance Trust

|  | FY2021       | FY2022       | FY2025       | FY2030        | FY2040        | 20-Year Total |
|--|--------------|--------------|--------------|---------------|---------------|---------------|
| <b>CURRENT</b>   | \$177.3 M    | \$173.7 M    | \$150.3 M    | \$99.3 M      | \$162.8 M     | \$2,682.2 M   |
| <i>2019 Valuation Projections</i>  | 4.74% of Pay | 4.53% of Pay | 3.65% of Pay | 2.15% of Pay  | 2.69% of Pay  |               |
|  | 52.4% Funded | 59.1% Funded | 79.0% Funded | 100.0% Funded | 100.0% Funded |               |
|  | \$1.6 B      | \$1.4 B      | \$0.9 B      | \$0.0 B       | \$0.0 B       |               |
| <b>POSITIVE Scenario</b>   | \$180.0 M    | \$178.5 M    | \$160.0 M    | \$99.3 M      | \$162.8 M     | \$2,742.9 M   |
| <i>Updated 2019 Valuation with Actual (FY20), 16% (FY21), and 8.0% for FY22 and beyond</i> | 4.81% of Pay | 4.66% of Pay | 3.88% of Pay | 2.15% of Pay  | 2.69% of Pay  |               |
|  | 51.2% Funded | 57.2% Funded | 76.1% Funded | 100.0% Funded | 100.0% Funded |               |
|  | \$1.6 B      | \$1.5 B      | \$1.0 B      | \$0.0 B       | \$0.0 B       |               |
| <b>EXPECTED Scenario</b>   | \$180.0 M    | \$180.4 M    | \$171.6 M    | \$99.3 M      | \$162.8 M     | \$2,823.2 M   |
| <i>Updated 2019 Valuation with Actual (FY20), and 8.0% for FY21 and beyond</i>             | 4.81% of Pay | 4.71% of Pay | 4.17% of Pay | 2.15% of Pay  | 2.69% of Pay  |               |
|  | 51.2% Funded | 56.5% Funded | 72.7% Funded | 100.0% Funded | 100.0% Funded |               |
|  | \$1.6 B      | \$1.5 B      | \$1.1 B      | \$0.0 B       | \$0.0 B       |               |
| <b>FLAT Scenario</b>   | \$180.0 M    | \$182.3 M    | \$183.2 M    | \$99.3 M      | \$162.8 M     | \$2,926.1 M   |
| <i>Updated 2019 Valuation w/ Actual (FY20), 0% (FY21), and 8.0% for FY22 and beyond</i>    | 4.81% of Pay | 4.76% of Pay | 4.45% of Pay | 2.15% of Pay  | 2.69% of Pay  |               |
|  | 51.2% Funded | 55.8% Funded | 69.4% Funded | 100.0% Funded | 100.0% Funded |               |
|  | \$1.6 B      | \$1.5 B      | \$1.2 B      | \$0.0 B       | \$0.0 B       |               |
| <b>NEGATIVE Scenario</b>   | \$180.0 M    | \$184.3 M    | \$194.8 M    | \$112.5 M     | \$162.8 M     | \$3,042.3 M   |
| <i>Updated 2019 Valuation w/ Actual (FY20), -8.0% (FY21), and 8.0% for FY22 and beyond</i> | 4.81% of Pay | 4.81% of Pay | 4.73% of Pay | 2.44% of Pay  | 2.69% of Pay  |               |
|  | 51.2% Funded | 55.0% Funded | 66.0% Funded | 97.7% Funded  | 100.0% Funded |               |
|  | \$1.6 B      | \$1.6 B      | \$1.4 B      | \$0.1 B       | \$0.0 B       |               |



***Our Members  
Come First!***

**800-618-1687**

**8 a.m. – 5 p.m. ET  
Monday – Friday**

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**<https://trs.ky.gov>**

***Protecting & Preserving Teachers' Retirement Benefits***