



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: APRIL 30, 2020

Participant Plan Performance Review for

West Virginia Investment Management Board

Participant Plans Allocation & Performance Net of Fees

Period Ending: April 30, 2020

| | 6/30/2019 | | 4/30/2020 | | Performance % | | | | | | | |
|--|-------------------|--------------|-------------------|--------------|---------------|---------|-------|--------|--------|--------|---------|---------|
| | Asset (\$000) | % | Asset (\$000) | % | 1 Month | 3 Month | FYTD | 1 Year | 3 Year | 5 Year | 10 Year | 20 Year |
| WVIMB Fund Assets | 19,986,151 | 100.0 | 18,988,633 | 100.0 | | | | | | | | |
| Pension Assets | 16,174,170 | 80.9 | 15,318,270 | 80.7 | | | | | | | | |
| Public Employees' Retirement System | 6,895,387 | 34.5 | 6,574,946 | 34.6 | 5.8 | (7.0) | (2.1) | (0.3) | 5.4 | 5.6 | 7.7 | 6.4 |
| Teachers' Retirement System | 7,836,784 | 39.1 | 7,363,642 | 38.8 | 5.8 | (7.0) | (2.1) | (0.3) | 5.4 | 5.5 | 7.7 | 6.2 |
| EMS Retirement System | 84,650 | 0.4 | 83,535 | 0.4 | 5.9 | (6.9) | (2.0) | (0.2) | 5.4 | 5.6 | 7.7 | |
| Public Safety Retirement System | 689,820 | 3.5 | 636,446 | 3.4 | 5.8 | (6.9) | (2.0) | (0.2) | 5.4 | 5.6 | 7.7 | 6.4 |
| Judges' Retirement System | 212,655 | 1.1 | 205,115 | 1.1 | 5.8 | (7.0) | (2.0) | (0.3) | 5.4 | 5.6 | 7.7 | 6.4 |
| State Police Retirement System | 207,101 | 1.0 | 207,666 | 1.1 | 5.9 | (7.0) | (2.0) | (0.3) | 5.4 | 5.6 | 7.7 | 6.4 |
| Deputy Sheriffs' Retirement System | 232,576 | 1.2 | 226,893 | 1.2 | 5.8 | (7.0) | (2.1) | (0.3) | 5.4 | 5.6 | 7.7 | 6.4 |
| Municipal Police & Firefighter Retirement System | 11,090 | 0.1 | 13,028 | 0.1 | 6.0 | (6.8) | (1.9) | (0.1) | 5.4 | 5.5 | | |
| Municipal Model A | 2,925 | 0.0 | 2,853 | 0.0 | 5.8 | (7.0) | (2.2) | (0.4) | 5.5 | 5.6 | | |
| Municipal Model C | 1,182 | 0.0 | 1,157 | 0.0 | 5.9 | (7.1) | (2.1) | (0.7) | | | | |
| Municipal Model D | 0 | 0.0 | 1,556 | 0.0 | 7.6 | (9.1) | | | | | | |
| Municipal Model F | 0 | 0.0 | 1,433 | 0.0 | 6.9 | (7.9) | (2.4) | | | | | |
| Insurance Assets | 2,829,801 | 14.2 | 2,662,767 | 14.0 | | | | | | | | |
| Workers' Compensation Old Fund | 1,105,721 | 5.5 | 983,252 | 5.1 | 4.8 | (5.4) | (0.6) | 0.7 | 3.4 | 3.5 | 4.6 | |
| Workers' Comp. Self-Insured Guaranty Risk Pool | 34,207 | 0.2 | 32,721 | 0.2 | 4.7 | (5.6) | (1.0) | 0.3 | 3.3 | 3.3 | 4.5 | |
| Workers' Comp. Self-Insured Security Risk Pool | 52,220 | 0.3 | 48,452 | 0.3 | 4.7 | (5.6) | (1.0) | 0.3 | 3.3 | 3.3 | | |
| Workers' Comp. Uninsured Employers' Fund | 13,468 | 0.1 | 13,326 | 0.1 | 4.6 | (5.4) | (1.0) | 0.2 | 3.2 | 3.1 | 4.2 | |
| Pneumoconiosis | 238,605 | 1.2 | 213,279 | 1.1 | 4.7 | (5.7) | (1.1) | 0.2 | 3.2 | 3.2 | 4.7 | 5.4 |
| Board of Risk & Insurance Management | 158,696 | 0.8 | 157,245 | 0.8 | 4.7 | (5.6) | (0.9) | 0.4 | 3.3 | 3.2 | 4.8 | |
| Public Employees' Insurance Agency | 225,314 | 1.1 | 200,322 | 1.1 | 4.5 | (4.9) | (0.2) | 1.3 | 3.5 | 3.4 | 4.8 | |
| WV Retiree Health Benefit Trust Fund | 1,001,570 | 5.0 | 1,014,170 | 5.3 | 6.0 | (6.9) | (1.9) | (0.2) | 5.5 | 5.6 | 7.5 | |
| Endowment Assets | 982,180 | 4.9 | 1,007,596 | 5.3 | | | | | | | | |
| Berkeley County Development Authority | 6,177 | 0.0 | 6,047 | 0.0 | 5.9 | (7.0) | (2.1) | (0.3) | 5.4 | | | |
| Wildlife Fund | 65,000 | 0.3 | 60,659 | 0.3 | 5.8 | (7.0) | (2.1) | (0.3) | 5.4 | 5.6 | 7.7 | 7.0 |
| Prepaid Tuition Trust | 34,513 | 0.2 | 1 | 0.0 | 0.0 | (2.5) | 1.0 | 3.4 | 4.8 | 5.0 | 6.7 | 6.2 |
| Revenue Shortfall Reserve Fund | 197,342 | 1.0 | 268,897 | 1.5 | 2.8 | 0.2 | 4.5 | 7.2 | 4.0 | 3.1 | 3.6 | |
| Revenue Shortfall Reserve Fund - Part B | 465,189 | 2.4 | 472,895 | 2.5 | 4.4 | (3.4) | 1.7 | 3.7 | 4.1 | 4.0 | 4.9 | |
| WV DEP Trust | 9,258 | 0.0 | 8,809 | 0.0 | 7.6 | (10.2) | (4.9) | (4.4) | 2.9 | 3.5 | | |
| WV DEP Agency | 204,701 | 1.0 | 190,288 | 1.0 | 5.6 | (7.2) | (2.4) | (1.3) | 3.1 | 3.4 | | |

Composite Asset Allocation & Performance Net of Fees

Period Ending: April 30, 2020

| | Asset (\$000) | % | Performance % | | | | | | | | |
|--|---------------|--------|---------------|---------|---------|---------|--------|--------|---------|---------|--|
| | | | 1 Month | 3 Month | FYTD | 1 Year | 3 Year | 5 Year | 10 Year | 20 Year | |
| Investment Pools Composite | 18,998,013 | 100.00 | | | | | | | | | |
| Total Equity Composite | 8,574,437 | 45.13 | 10.62 | (13.24) | (7.17) | (7.17) | 2.90 | 4.08 | 7.84 | 5.65 | |
| +/- Total Equity Base Index (b) | | | (0.14) | (1.41) | (2.39) | (2.73) | (1.83) | (0.71) | 0.25 | 0.73 | |
| Domestic Equity Composite | 4,422,510 | 23.28 | 12.81 | (10.98) | (2.13) | (1.87) | 7.24 | 7.62 | 11.27 | 6.68 | |
| +/- Russell 3000 Index | | | (0.43) | (0.65) | (0.99) | (0.83) | (0.78) | (0.71) | (0.02) | 0.92 | |
| International Equity Composite | 4,151,927 | 21.85 | 8.39 | (15.52) | (12.02) | (12.24) | (1.28) | 0.59 | 4.34 | 5.04 | |
| +/- MSCI AC World ex US IMI Index (c) | | | 0.18 | (0.05) | (0.40) | (0.90) | (1.25) | 0.23 | 0.93 | 1.48 | |
| Fixed Income Composite | 3,234,561 | 17.03 | 2.81 | (1.90) | 2.83 | 5.50 | 4.15 | 3.71 | 4.19 | 5.61 | |
| +/- Bloomberg Barclays Capital Universal (d) | | | 0.81 | (3.41) | (3.17) | (3.65) | (0.63) | (0.08) | 0.05 | 0.30 | |
| Core Fixed Income Composite | 997,344 | 5.25 | 1.87 | 1.79 | 6.67 | 10.05 | 5.12 | 3.99 | 4.43 | | |
| +/- Bloomberg Barclays Capital Aggregate | | | 0.09 | (1.21) | (0.89) | (0.79) | (0.05) | 0.19 | 0.47 | | |
| Total Return Fixed Income Composite (k) | 2,237,217 | 11.78 | 3.24 | (3.52) | 1.14 | 3.51 | 3.70 | 3.57 | 4.01 | 5.93 | |
| +/- Bloomberg Barclays Capital Universal | | | 1.24 | (5.03) | (4.86) | (5.64) | (1.08) | (0.22) | (0.13) | 0.58 | |
| TIPS Composite | 440,161 | 2.32 | 2.88 | 2.41 | 6.86 | 9.56 | 4.28 | 3.13 | | | |
| +/- Bloomberg Barclays Capital U.S. TIPS | | | 0.10 | 0.04 | 0.10 | 0.10 | 0.07 | 0.05 | | | |
| Cash Composite | 82,099 | 0.43 | 0.02 | 0.20 | 1.31 | 1.70 | 1.66 | 1.12 | 0.62 | 1.77 | |
| +/- Citigroup 90 Day T-Bill (e) | | | (0.06) | (0.13) | (0.19) | (0.22) | (0.09) | (0.02) | (0.04) | (0.03) | |
| Private Equity Composite | 2,039,849 | 10.74 | 1.63 | 5.30 | 9.36 | 20.46 | 19.75 | 16.68 | 15.41 | | |
| +/- Russell 3000 + 3% (f, g) | | | | | | | | 5.35 | 0.47 | | |
| Real Estate Composite | 2,001,125 | 10.53 | 0.70 | (0.21) | 2.24 | 4.56 | 7.50 | 8.18 | 9.25 | | |
| +/- NCREIF + 1% (f) | | | | | | | | (0.87) | (1.92) | | |
| Hedge Fund Composite | 1,951,002 | 10.27 | 2.36 | (6.67) | (3.61) | (2.85) | 1.65 | 1.19 | 3.63 | | |
| +/- HFRI FOF + 1% (h) | | | (1.36) | (1.18) | (0.96) | (0.93) | (0.34) | (0.48) | 0.47 | | |
| Opportunistic Income Composite | 674,779 | 3.55 | 0.33 | 1.90 | 4.06 | 8.21 | 6.30 | | | | |
| +/- CS Leveraged Loan + 2% (i) | | | (4.12) | 11.35 | 9.49 | 13.31 | 3.77 | | | | |

Participant Plans Allocation vs. Strategy

Period Ending: April 30, 2020

| | Equity | | Fixed Income | | Private Equity | | Real Estate | | Hedge Funds | | Opportunistic Income | | Cash | |
|--|----------|------------|--------------|------------|----------------|------------|-------------|------------|-------------|------------|----------------------|------------|----------|------------|
| | Actual % | Strategy % | Actual % | Strategy % | Actual % | Strategy % | Actual % | Strategy % | Actual % | Strategy % | Actual % | Strategy % | Actual % | Strategy % |

Pension Assets

| | | | | | | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|
| Public Employees' Retirement System | 48.2 | 55.0 | 12.8 | 15.0 | 12.5 | 10.0 | 12.2 | 10.0 | 10.0 | 10.0 | 4.1 | 0.0 | 0.2 | 0.0 |
| Teachers' Retirement System | 48.1 | 55.0 | 12.6 | 15.0 | 12.6 | 10.0 | 12.4 | 10.0 | 10.0 | 10.0 | 4.2 | 0.0 | 0.1 | 0.0 |
| EMS Retirement System | 48.6 | 55.0 | 13.2 | 15.0 | 12.2 | 10.0 | 11.9 | 10.0 | 9.8 | 10.0 | 4.0 | 0.0 | 0.3 | 0.0 |
| Public Safety Retirement System | 48.3 | 55.0 | 12.0 | 15.0 | 12.7 | 10.0 | 12.5 | 10.0 | 10.3 | 10.0 | 4.2 | 0.0 | 0.0 | 0.0 |
| Judges' Retirement System | 48.5 | 55.0 | 12.9 | 15.0 | 12.4 | 10.0 | 12.1 | 10.0 | 9.9 | 10.0 | 4.1 | 0.0 | 0.1 | 0.0 |
| State Police Retirement System | 48.6 | 55.0 | 13.6 | 15.0 | 12.0 | 10.0 | 11.8 | 10.0 | 9.8 | 10.0 | 4.0 | 0.0 | 0.2 | 0.0 |
| Deputy Sheriffs' Retirement System | 48.5 | 55.0 | 13.2 | 15.0 | 12.3 | 10.0 | 12.0 | 10.0 | 9.9 | 10.0 | 4.1 | 0.0 | 0.0 | 0.0 |
| Municipal Police & Firefighter Retirement System | 49.1 | 55.0 | 14.9 | 15.0 | 11.3 | 10.0 | 11.1 | 10.0 | 9.7 | 10.0 | 3.7 | 0.0 | 0.2 | 0.0 |
| Municipal Model A | 48.7 | 55.0 | 12.3 | 15.0 | 12.0 | 10.0 | 11.8 | 10.0 | 10.5 | 10.0 | 4.0 | 0.0 | 0.7 | 0.0 |
| Municipal Model C | 46.4 | 50.0 | 28.1 | 30.0 | 6.0 | 5.0 | 5.9 | 5.0 | 9.9 | 10.0 | 2.0 | 0.0 | 1.7 | 0.0 |
| Municipal Model D | 64.0 | 65.0 | 34.6 | 35.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 0.0 |
| Municipal Model F | 54.6 | 55.0 | 45.3 | 45.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 |

Insurance Assets

| | | | | | | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|------|-----|-----|------|------|
| Workers' Compensation Old Fund | 29.3 | 30.0 | 52.0 | 50.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 15.0 | 0.0 | 0.0 | 3.7 | 5.0 |
| Workers' Comp. Self-Insured Guaranty Risk Pool | 29.1 | 30.0 | 46.3 | 45.0 | 0.0 | 0.0 | 0.0 | 0.0 | 19.6 | 20.0 | 0.0 | 0.0 | 5.0 | 5.0 |
| Workers' Comp. Self-Insured Security Risk Pool | 29.2 | 30.0 | 46.7 | 45.0 | 0.0 | 0.0 | 0.0 | 0.0 | 19.8 | 20.0 | 0.0 | 0.0 | 4.3 | 5.0 |
| Workers' Comp. Uninsured Employers Fund | 29.1 | 30.0 | 41.0 | 40.0 | 0.0 | 0.0 | 0.0 | 0.0 | 19.5 | 20.0 | 0.0 | 0.0 | 10.4 | 10.0 |
| Pneumoconiosis | 29.7 | 30.0 | 47.0 | 45.0 | 0.0 | 0.0 | 0.0 | 0.0 | 20.8 | 20.0 | 0.0 | 0.0 | 2.5 | 5.0 |
| Board of Risk & Insurance Mgmt. | 29.2 | 30.0 | 46.1 | 45.0 | 0.0 | 0.0 | 0.0 | 0.0 | 19.6 | 20.0 | 0.0 | 0.0 | 5.1 | 5.0 |
| Public Employees' Insurance Agency | 24.0 | 25.0 | 56.5 | 55.0 | 0.0 | 0.0 | 0.0 | 0.0 | 19.5 | 20.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| WV Retiree Health Benefit Trust Fund | 49.9 | 55.0 | 15.0 | 15.0 | 11.0 | 10.0 | 10.8 | 10.0 | 9.7 | 10.0 | 3.6 | 0.0 | 0.0 | 0.0 |

Endowment Assets

| | | | | | | | | | | | | | | |
|---|------|------|-------|-------|------|------|------|------|------|------|-----|-----|-------|------|
| Berkeley County Development Authority | 48.4 | 55.0 | 13.4 | 15.0 | 12.2 | 10.0 | 12.0 | 10.0 | 9.9 | 10.0 | 4.1 | 0.0 | 0.0 | 0.0 |
| Wildlife Fund | 48.2 | 55.0 | 13.3 | 15.0 | 12.4 | 10.0 | 12.1 | 10.0 | 9.8 | 10.0 | 4.1 | 0.0 | 0.1 | 0.0 |
| Prepaid Tuition Trust | 0.0 | 0.0 | 0.0 | 70.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 30.0 |
| Revenue Shortfall Reserve Fund | 0.0 | 0.0 | 100.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Revenue Shortfall Reserve Fund - Part B | 21.0 | 22.5 | 79.0 | 77.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| WV DEP Trust | 63.9 | 65.0 | 15.1 | 15.0 | 0.0 | 0.0 | 0.0 | 0.0 | 21.0 | 20.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| WV DEP Agency | 38.6 | 40.0 | 41.7 | 40.0 | 0.0 | 0.0 | 0.0 | 0.0 | 19.7 | 20.0 | 0.0 | 0.0 | 0.0 | 0.0 |

- (a) As of January 2019, the PERS Base is 60% MSCI ACWI Gross and 40% Bloomberg Barclays Capital Universal. From January 2014 to December 2018, the PERS Base was 30% Russell 3000, 30% MSCI ACWI ex USA (IMI), and 40% Bloomberg Barclays Capital Universal. From April 2008 to December 2013, the PERS Base was 30% Russell 3000, 30% MSCI ACWI ex USA (Standard), and 40% Bloomberg Barclays Capital Universal. Prior periods were 42% Russell 3000, 18% MSCI ACWI ex USA, and 40% Bloomberg Barclays Capital Aggregate.
- (b) As of January 2019, the Total Equity Base Index is 100% MSCI ACWI Gross. From January 2014 to December 2018, the Total Equity Base Index was 50% Russell 3000 and 50% MSCI ACWI ex USA (IMI). From April 2008 to December 2013, the Total Equity Base Index was 50% Russell 3000 and 50% MSCI ACWI ex USA (Standard). Prior periods were 40% S&P 500, 30% Russell 2500, and 30% MSCI ACWI ex USA.
- (c) Prior to January 2014, the index was the MSCI ACW ex USA (Standard).
- (d) Prior to April 2008, the index was Bloomberg Barclays Capital Aggregate.
- (e) Prior to January 2014, the index was Citigroup 90 Day T-Bill plus 15 basis points.
- (f) The Private Equity Composite and Real Estate Composite are long-term programs whose benchmarks are only reported for 5 years and beyond.
- (g) Prior to January 2014, the index was S&P 500 plus 500 basis points.
- (h) Prior to January 2014, the index was Libor plus 400 basis points.
- (i) As of July 2019, the Franklin Benchmark is 50% JPM EMBI Global Diversified ex GCC and 50% JPM GBI EM Diversified. Prior periods were 50% JPM EMBI Global Diversified and 50% JPM GBI EM Diversified.
- (j) Prior to April 2008, the index was a custom index.
- (k) From October 2015 to March 2017, performance returns from the Opportunistic Income Pool were included in the Total Return Fixed Income Composite.
- (l) Prior to April 2017, the index was CS Leveraged Loan plus 250 basis points.

Note: Participant returns are net of fees. Portfolio returns are net of management fees. Returns shorter than one year are unannualized.

Disclaimer

This report contains confidential and proprietary information and is subject to the terms and conditions of the Consulting Agreement. It is being provided for use solely by the customer. The report may not be sold or otherwise provided, in whole or in part, to any other person or entity without written permission from Verus Advisory, Inc., (hereinafter Verus) or as required by law or any regulatory authority. The information presented does not constitute a recommendation by Verus and cannot be used for advertising or sales promotion purposes. This does not constitute an offer or a solicitation of an offer to buy or sell securities, commodities or any other financial instruments or products.

The information presented has been prepared using data from third party sources that Verus believes to be reliable. While Verus exercised reasonable professional care in preparing the report, it cannot guarantee the accuracy of the information provided by third party sources. Therefore, Verus makes no representations or warranties as to the accuracy of the information presented. Verus takes no responsibility or liability (including damages) for any error, omission, or inaccuracy in the data supplied by any third party. Nothing contained herein is, or should be relied on as a promise, representation, or guarantee as to future performance or a particular outcome. Even with portfolio diversification, asset allocation, and a long-term approach, investing involves risk of loss that the investor should be prepared to bear.

The information presented may be deemed to contain forward-looking information. Examples of forward looking information include, but are not limited to, (a) projections of or statements regarding return on investment, future earnings, interest income, other income, growth prospects, capital structure and other financial terms, (b) statements of plans or objectives of management, (c) statements of future economic performance, and (d) statements of assumptions, such as economic conditions underlying other statements. Such forward-looking information can be identified by the use of forward looking terminology such as believes, expects, may, will, should, anticipates, or the negative of any of the foregoing or other variations thereon comparable terminology, or by discussion of strategy. No assurance can be given that the future results described by the forward-looking information will be achieved. Such statements are subject to risks, uncertainties, and other factors which could cause the actual results to differ materially from future results expressed or implied by such forward looking information. The findings, rankings, and opinions expressed herein are the intellectual property of Verus and are subject to change without notice. The information presented does not claim to be all-inclusive, nor does it contain all information that clients may desire for their purposes. The information presented should be read in conjunction with any other material provided by Verus, investment managers, and custodians.

Verus will make every reasonable effort to obtain and include accurate market values. However, if managers or custodians are unable to provide the reporting period's market values prior to the report issuance, Verus may use the last reported market value or make estimates based on the manager's stated or estimated returns and other information available at the time. These estimates may differ materially from the actual value. Hedge fund market values presented in this report are provided by the fund manager or custodian. Market values presented for private equity investments reflect the last reported NAV by the custodian or manager net of capital calls and distributions as of the end of the reporting period. These values are estimates and may differ materially from the investments actual value. Private equity managers report performance using an internal rate of return (IRR), which differs from the time-weighted rate of return (TWRR) calculation done by Verus. It is inappropriate to compare IRR and TWRR to each other. IRR figures reported in the illiquid alternative pages are provided by the respective managers, and Verus has not made any attempts to verify these returns. Until a partnership is liquidated (typically over 10-12 years), the IRR is only an interim estimated return. The actual IRR performance of any LP is not known until the final liquidation.

Verus receives universe data from InvMetrics, eVestment Alliance, and Morningstar. We believe this data to be robust and appropriate for peer comparison. Nevertheless, these universes may not be comprehensive of all peer investors/managers but rather of the investors/managers that comprise that database. The resulting universe composition is not static and will change over time. Returns are annualized when they cover more than one year. Investment managers may revise their data after report distribution. Verus will make the appropriate correction to the client account but may or may not disclose the change to the client based on the materiality of the change.