

Investment Manager Redemption & Allocation Recommendations

December 6–7, 2018



Agenda

- I. Executive Summary
- II. Background
- III. Recommendation & Next Steps
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*Names used in this presentation are a shortened version that is used for ease of communication purposes throughout this document. The formal recommendations to the Board on the last page of this presentation reflect the full legal names of the investments.

Section I

EXECUTIVE SUMMARY

Recommendation

Executive Summary

| SUMMARY OF RECOMMENDATIONS | | |
|---|--------------------------------|--|
| Redemption Manager | Strategy Classification | Amount |
| Managers 1, 2, and 3 | U.S. Equity | Approximately \$1 billion in total assets |
| Recommended Allocation of Funds | Strategy Classification | Amount |
| Northern Trust Collective Russell 3000 Index Fund | U.S. Equity | Approximately \$500 million |
| U.S. Equity Minimum Volatility Index Collective Fund | U.S. Equity | Approximately \$500 million |

*Please refer to the board communication and memo for additional information

Section II

BACKGROUND

Background

- ▶ The U.S. Equity portfolio was re-structured to a Core/Satellite approach in March 2012 from a passive only structure.
- ▶ The decision to move to a core/satellite approach was based on the belief that:
 - Adding active management allows for increased return potential
 - The combination of both passive and active management is intended to help lower risk
 - Maintaining a passive allocation helps to minimize higher fees vs. a structure that allocates 100% to active management
- ▶ In 2013, TMRS Board of Trustees approved the first active strategies to support TMRS's Strategic Plan objectives.
- ▶ TMRS staff implemented the core/satellite structure in phases from 2012 to 2015.

Section III

RECOMMENDATION & NEXT STEPS

Recommendation

Reasons for Recommended Changes to U.S. Equity Portfolio:

- ▶ Loss of conviction in Watch List managers to recover to an acceptable level
- ▶ Since inception relative underperformance over the past 3–5 years (see slide 9)
- ▶ Loss of clients/assets under management
- ▶ Significant changes in firm ownership and/or structure
- ▶ Personnel changes
- ▶ Lack of asset growth
- ▶ Higher net of fee costs (currently paying higher active fees while strategies underperform). Potential annual savings would be approximately \$5 million.
- ▶ Elimination of uncompensated risks
- ▶ Minimize downside risk
- ▶ Staff focus on a new direction for the Public Equity portfolio

Market Environment

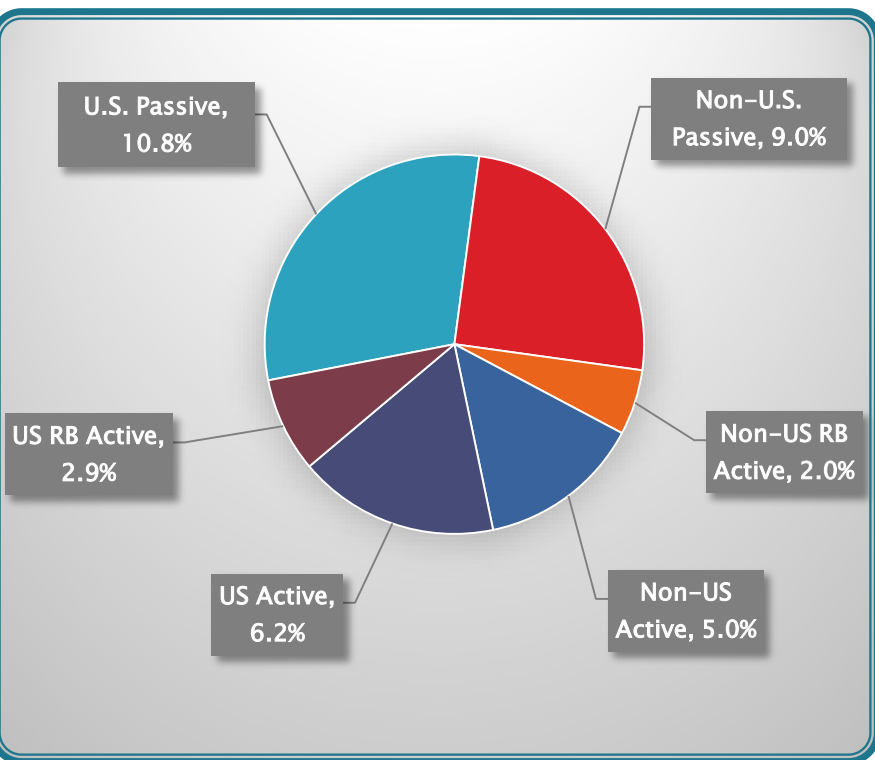
- ▶ The current state of the capital markets shows no clear direction in the near term
- ▶ The 50% allocation to the U.S. Equity Minimum Volatility Index Collective Fund helps to protect the portfolio in case of a further drawdown in the equity markets.
- ▶ The 50% allocation to the Northern Trust Collective Russell 3000 Index Fund will provide the portfolio the upside potential should the markets rally substantially from current levels.

Performance Update

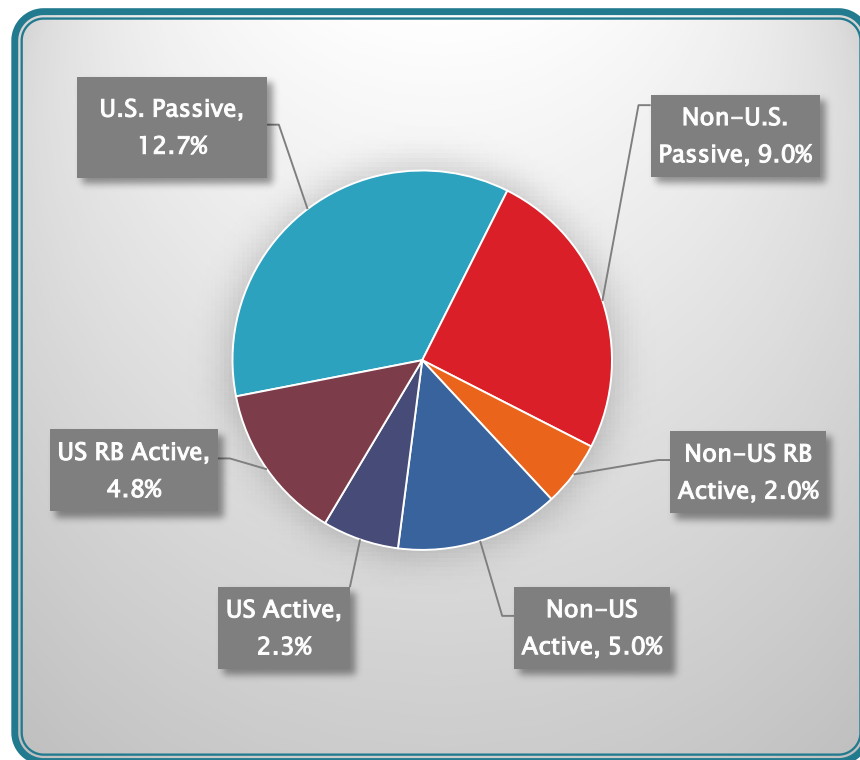
| Manager | YTD | 1 Year | 3 Year | Since Inception | Inception Date |
|----------------------|--------------|--------------|--------------|-----------------|----------------|
| Manager 1 | -4.6% | -1.3% | 7.0% | 7.5% | 1/1/2014 |
| <i>Excess Return</i> | <i>-7.0%</i> | <i>-7.8%</i> | <i>-4.3%</i> | <i>-2.5%</i> | |
| Manager 2 | -6.7% | -2.7% | 5.4% | 2.9% | 1/1/2014 |
| <i>Excess Return</i> | <i>-2.4%</i> | <i>-2.9%</i> | <i>-2.7%</i> | <i>-4.6%</i> | |
| Manager 3 | -6.4% | -0.2% | 7.0% | 3.7% | 12/1/2014 |
| <i>Excess Return</i> | <i>-4.9%</i> | <i>-3.0%</i> | <i>-2.0%</i> | <i>-3.3%</i> | |
| Manager 3 | -6.3% | 1.6% | 10.4% | 9.2% | 9/1/2015 |
| <i>Excess Return</i> | <i>-5.7%</i> | <i>-0.2%</i> | <i>-0.3%</i> | <i>-1.0%</i> | |

Public Equity Portfolio*

Current Allocation By Asset Category vs. Total Portfolio



Recommended Allocation By Asset Category vs. Total Portfolio



*As of 10/31/2018

Next Steps

- ▶ Complete transition of assets by mid-December using a transition manager (BlackRock, Citigroup, or Russell)
- ▶ Negotiate a lower fee structure for the U.S. Equity Minimum Volatility strategy
- ▶ Present asset class review in March 2019 and discuss the recommended path forward with the TMRS Board
- ▶ Continue to research additional managers/strategies for inclusion into the total equity portfolio

Section IV

REQUESTED BOARD ACTION

Approval of Recommendation

TMRS Staff and RVK recommend the redemption of the investment managers as described in the Board Communication Memo and to allocate the assets to the following existing strategies:

- ▶ Northern Trust Collective Russell 3000 Index Fund – Non-Lending (50%)
- ▶ UBS U.S. Equity Minimum Volatility Index Collective Fund (50%)

DISCLOSURES

TMRS periodically discloses public information that is not excepted from disclosure under Section 552.0225(b) of the Texas Public Information Act. Information provided by a manager, a Managing General Partner (GP), any of its Associates or other data provider to TMRS or a TMRS service provider, and contained in these materials (i) may have been independently produced or modified by TMRS or the TMRS service provider; (ii) has not been reviewed or approved by the manager, Managing GP or any of its Associates; and (iii) may not reflect the historical performance or asset value reflected in the manager's, Managing GP's or any of its Associates' records and, therefore, should not be used for comparative purposes.

APPENDIX



Changes to Risk Profile

| Current US Equity portfolio, 9/30/2018 | | | | | Proposed US Equity portfolio, 9/30/2018 | | | | |
|--|----------------|-----------------------------|-------------|------------------------------------|---|----------------|-----------------------------|-------------|------------------------------------|
| Risk Source | Portfolio Risk | Portfolio Risk Contribution | Active Risk | Active Portfolio Risk Contribution | Risk Source | Portfolio Risk | Portfolio Risk Contribution | Active Risk | Active Portfolio Risk Contribution |
| Total Risk | 10.41 | 10.41 | 0.94 | 0.94 | Total Risk | 9.94 | 9.94 | 0.87 | 0.87 |
| Local Market Risk | 10.39 | 10.39 | 0.93 | 0.93 | Local Market Risk | 9.94 | 9.94 | 0.88 | 0.88 |
| Common Factor Risk | 10.35 | 10.31 | 0.79 | 0.66 | Common Factor Risk | 9.89 | 9.85 | 0.79 | 0.72 |
| Industry | 0.75 | 0.07 | 0.33 | 0.10 | Industry | 0.74 | -0.03 | 0.37 | 0.23 |
| Style | 1.14 | 0.14 | 0.73 | 0.55 | Style | 0.95 | -0.30 | 0.58 | 0.48 |
| Country | 0.01 | 0.00 | 0.01 | 0.00 | Country | 0.00 | 0.00 | 0.00 | 0.00 |
| Market | 10.23 | 10.09 | 0.11 | 0.01 | Market | 10.30 | 10.18 | 0.03 | 0.02 |
| Factor Interaction | N/A | N/A | N/A | N/A | Factor Interaction | N/A | N/A | N/A | N/A |
| Selection Risk | 0.93 | 0.08 | 0.50 | 0.27 | Selection Risk | 0.95 | 0.09 | 0.37 | 0.15 |
| Currency Risk | 0.06 | 0.02 | 0.06 | 0.00 | Currency Risk | 0.01 | 0.01 | 0.01 | 0.00 |

Total risk drops from 10.41 to 9.94. Active risk drops from 0.94 to 0.87, with the primary reduction coming from Style Factor risk.

Changes to Style Factors

| Current portfolio, 9/30/2018 | | | | | | | | |
|------------------------------|-----------|--------------------------|--------|-----------|--------------------------|--------|---------------------|----------------------|
| Factor | Exposure | | | Risk | | | Cont. to Total Risk | Cont. to Active Risk |
| | Portfolio | Benchmark (Russell 3000) | Active | Portfolio | Benchmark (Russell 3000) | Active | | |
| US Beta | -0.14 | -0.08 | -0.06 | 0.47 | 0.27 | 0.21 | -0.38 | 0.00 |
| US Dividend Yield | 0.03 | 0.11 | -0.08 | 0.04 | 0.16 | 0.12 | 0.00 | 0.00 |
| US Earnings Quality | -0.10 | -0.06 | -0.04 | 0.17 | 0.11 | 0.06 | 0.04 | 0.00 |
| US Earnings Yield | 0.03 | 0.04 | -0.01 | 0.07 | 0.10 | 0.03 | 0.00 | 0.00 |
| US Growth | -0.15 | -0.15 | 0.00 | 0.17 | 0.17 | 0.00 | 0.01 | 0.00 |
| US Leverage | 0.06 | 0.06 | 0.00 | 0.10 | 0.11 | 0.00 | 0.04 | 0.00 |
| US Liquidity | 0.10 | 0.00 | 0.10 | 0.14 | 0.00 | 0.14 | 0.02 | 0.00 |
| US Long-Term Reversal | 0.12 | 0.12 | 0.01 | 0.16 | 0.15 | 0.01 | 0.00 | 0.00 |
| US Management Quality | 0.03 | 0.08 | -0.05 | 0.03 | 0.09 | 0.05 | 0.00 | 0.01 |
| US Mid Capitalization | 0.13 | 0.00 | 0.13 | 0.22 | 0.01 | 0.23 | 0.02 | 0.02 |
| US Momentum | -0.13 | -0.12 | -0.01 | 0.44 | 0.42 | 0.02 | 0.10 | 0.00 |
| US Profitability | -0.11 | -0.09 | -0.03 | 0.20 | 0.15 | 0.05 | 0.02 | 0.00 |
| US Prospect | 0.10 | 0.07 | 0.03 | 0.08 | 0.06 | 0.02 | 0.03 | 0.00 |
| US Residual Volatility | 0.02 | 0.04 | -0.02 | 0.06 | 0.12 | 0.06 | 0.03 | -0.01 |
| US Size | -0.37 | -0.06 | -0.31 | 0.93 | 0.15 | 0.78 | 0.20 | 0.61 |
| US Value | 0.13 | 0.09 | 0.04 | 0.21 | 0.14 | 0.07 | 0.04 | 0.00 |

Changes to Style Factors

| Proposed portfolio, 9/30/2018 | | | | | | | | | | |
|-------------------------------|-----------|--------------------------|--------|-----------|--------------------------|--------|---------------------|----------------------|--|--|
| Factor | Exposure | | | Risk | | | Cont. to Total Risk | Cont. to Active Risk | Change in active exposure (Proposed - Current) | |
| | Portfolio | Benchmark (Russell 3000) | Active | Portfolio | Benchmark (Russell 3000) | Active | | | | |
| US Beta | -0.24 | -0.08 | -0.16 | 0.81 | 0.27 | 0.54 | -0.64 | 0.43 | -0.10 | |
| US Dividend Yield | 0.10 | 0.11 | -0.01 | 0.16 | 0.16 | 0.01 | 0.00 | 0.00 | 0.08 | |
| US Earnings Quality | -0.03 | -0.06 | 0.04 | 0.05 | 0.11 | 0.06 | 0.01 | 0.02 | 0.07 | |
| US Earnings Yield | 0.02 | 0.04 | -0.02 | 0.05 | 0.10 | 0.06 | 0.00 | 0.00 | -0.01 | |
| US Growth | -0.17 | -0.15 | -0.02 | 0.20 | 0.17 | 0.03 | 0.01 | 0.00 | -0.02 | |
| US Leverage | 0.05 | 0.06 | -0.02 | 0.08 | 0.11 | 0.03 | 0.03 | 0.00 | -0.01 | |
| US Liquidity | 0.04 | 0.00 | 0.04 | 0.06 | 0.00 | 0.06 | 0.01 | -0.01 | -0.06 | |
| US Long-Term Reversal | 0.11 | 0.12 | 0.00 | 0.15 | 0.15 | 0.00 | 0.00 | 0.00 | -0.01 | |
| US Management Quality | 0.07 | 0.08 | 0.00 | 0.08 | 0.09 | 0.00 | 0.01 | 0.00 | 0.04 | |
| US Mid Capitalization | 0.08 | 0.00 | 0.08 | 0.14 | 0.01 | 0.14 | 0.01 | 0.00 | -0.05 | |
| US Momentum | -0.12 | -0.12 | 0.00 | 0.42 | 0.42 | 0.00 | 0.09 | 0.00 | 0.01 | |
| US Profitability | -0.09 | -0.09 | 0.00 | 0.15 | 0.15 | 0.01 | 0.01 | 0.00 | 0.03 | |
| US Prospect | 0.09 | 0.07 | 0.01 | 0.07 | 0.06 | 0.01 | 0.02 | 0.00 | -0.01 | |
| US Residual Volatility | 0.02 | 0.04 | -0.02 | 0.06 | 0.12 | 0.06 | 0.03 | 0.02 | 0.00 | |
| US Size | -0.22 | -0.06 | -0.16 | 0.54 | 0.15 | 0.39 | 0.09 | 0.06 | 0.16 | |
| US Value | 0.09 | 0.09 | 0.00 | 0.14 | 0.14 | 0.00 | 0.02 | 0.00 | -0.04 | |

The primary impacts are that our underweight to "US Size" is decreased (i.e. our overweight to small size is decreased), and our underweight to "US Beta" is increased. For more information on how US Beta is defined, see the tab on style factor definitions; this is essentially the effect we intend to produce when we increase the allocation to Min Vol. None of the other factor changes are significant. While US Value active exposure decreases very slightly from 0.04 to 0.00, the US Dividend Yield exposure increases from -0.08 to -0.01, so the proposal does not have a large impact on our exposure to value.