



State of Connecticut
Office of the Treasurer

SHAWN T. WOODEN
TREASURER

March 4, 2020

Members of the Investment Advisory Council ("IAC")

Re: Consideration of Finalists for the Passive Panel Investment Manager Search

Dear Fellow IAC Member:

At the March 11, 2020 meeting of the IAC, I will present for your consideration six firms for passive investment and transition management services for the Connecticut Retirement Plans and Trust Funds ("CRPTF"): Rhumblin Advisers LP, Piedmont Investment Advisors Inc., T. Rowe Price Group Inc., State Street Global Advisors, Northern Trust Corporation, and Blackrock Inc. This is the culmination of a competitive search process, conducted through a Request for Proposal, as outlined and endorsed by the IAC at the July 10, 2019 meeting.

The objective of this search was to establish a panel of investment managers that can provide flexibility for the CRPTF with regard to standalone passive management, enhanced index mandates and transition management services. At the meeting next week, we will hear brief presentations from each firm that will provide details of their index and transition management capabilities.

Attached for your review is a recommendation from Chief Investment Officer, Laurie Martin along with an overview of each firm. I look forward to discussing this with you at the March meeting of the IAC and receiving your feedback on these finalists.

Sincerely,

A handwritten signature in blue ink that reads "Shawn T. Wooden".

Shawn T. Wooden
State Treasurer

OFFICE OF THE STATE TREASURER
MEMORANDUM



RECOMMENDATION

TO: Shawn T. Wooden, Treasurer

FROM: Laurie Martin, Chief Investment Officer

CC: Darrell Hill, Deputy Treasurer

DATE: February 25, 2020

SUBJECT: Passive Panel Recommendations

Summary

The purpose of this memorandum is to provide the results and recommendations for the Passive Panel Request for Proposal (“RFP”). The Scope of Services and Project Timeline were presented to the Investment Advisory Committee on July 10, 2019 and the RFP was issued on July 31, 2019 with an original deadline of August 31, 2019.

After reviewing the responses and meeting in person with the individual firms in September and October and learning about the expanding capabilities that each firm and the industry has developed, the Pension Fund Management (“PFM”) team decided to broaden the RFP to include transition management services and extended the RFP deadline to January 17, 2020. The RFP was undertaken to respond to passive investment manager contract expirations and to identify strategies available in the market that would provide flexibility through passive management solutions across asset classes – which includes transition management services.

The RFP was well received by all of the traditional index providers as well as active investment managers offering enhanced index products and solutions. A total of 11 proposals offering separately managed accounts across all asset class strategies were evaluated by the PFM team with the assistance of the Connecticut Retirement Plans and Trust Funds (“CRPTF”) general consultant Meketa Investment Group (“Meketa”).

PFM interviewed all respondents selecting ten firms to be considered for the passive investment and transition management panel for the CRPTF. The following memorandum will provide an overview of the types of options available in the market today along with the key metrics that were considered. This recommendation seeks to provide flexibility for the CRPTF with regard to standalone passive management, enhanced index mandates and transition management services.

Passive Management Investments

The CRPTF invests in passive investment strategies – both index funds and enhanced index funds - that look to match the performance and risk characteristics of a given index. These strategies are typically used in the more efficient areas of the market where active management has not resulted in consistent outperformance over time to substantiate the associated fees.

Table 1 and **Table 2** show the details of the index and enhanced index investments in the CRPTF, as well as the current investment managers as of December 31, 2019.

Table 1
CRPTF Index and Enhanced Index Investments
As of December 31, 2019

	Amount (\$M)	Percentage of Asset Class	Percentage of CRPTF
Domestic Equity Fund	\$7,853.7	90.3%	20.9%
Developed Market International Stock Fund	2,199.9	46.7%	5.8%
Core Fixed Income Fund	363.4	6.6%	1.0%
Total	\$10,417.0		27.7%

Table 2
CRPTF Index and Enhanced Index Investment Managers
As of December 31, 2019

	Amount (\$M)	Strategy	Percentage of CRPTF
State Street Global Advisors	\$6,815.6	US Equity Developed Int'l Equity Core Fixed Income	18.1%
T.Rowe Price	3,601.4	US Equity	9.6%
Total	\$10,417.0		27.7%

Transition Management Services

The CRPTF is currently using three providers for transition management services - BlackRock, Northern Trust and Russell Investments. These services have been utilized to assist with changes in investment manager relationships due to either the termination of an underperforming manager or as a placeholder for an indexed strategy to remain invested in a particular asset class while changing asset allocations. When there is a need for transition management services, PFM summarizes the scope of the assignment with the providers and each firm bids on the transaction. The submissions are reviewed by PFM and a provider is selected based on estimated cost, timing and the firm's expertise with the particular asset class.

Request for Proposal Process

Proposals were submitted by twelve firms across all asset classes. The RFP responses were assessed from both a qualitative and quantitative perspective through a review of their organization, investment team and process, historical performance and tracking error relative to the respective indices and their fee proposals. Two of the responses, did not meet the needs of the CRPTF at this time and were not further considered.

The PFM team met with the remaining ten firms to discuss their proposals. In addition to investing in index and enhanced index strategies, we assessed the firm's ability to partner with the CRPTF on transition management services and to provide customized separate accounts that would allow for divestment of securities in the index. We also assessed their overall risk management practices and research capabilities. Details on the six firms further considered after this review are listed in Table 3 below.

Table 3
Passive Panel Respondent List

Firm Name	Total AUM	Index Strategies	Transition Management
Rhumblin	\$60.5B	Global Equity US Fixed Income US TIPS	No
Piedmont	\$4.9B	US Equity	No
T Rowe Price	\$1.1T	US Equity	No
State Street Global Advisors	\$3.1T	Global Equity Global Fixed Income US TIPS	Yes
Northern Trust	\$983B	Global Equity Global Fixed Income US TIPS	Yes
Blackrock	\$7.4T	Global Equity Global Fixed Income US TIPS	Yes

Workforce Diversity Statistics

Respondents provided workforce diversity statistics for the last three year in response to the compliance questionnaire. A comparison of the responses received by each firm as of December 31, 2018 is detailed below in Table 5 and Table 6.

Table 5
Diversity Statistics – Women

MANAGER	EXECUTIVE	MANAGEMENT	PROFESSIONAL	FIRMWIDE
Rhumblin	33%	29%	42%	40%
Piedmont	44%	31%	43%	50%
T Rowe Price	39%	45%	38%	45%
State Street	29%	36%	36%	38%
Northern Trust	42%	42%	47%	48%
BlackRock	17%	29%	42%	40%

Table 6
Diversity Statistics – Minorities

MANAGER	EXECUTIVE	MANAGEMENT	PROFESSIONAL	FIRMWIDE
Rhumblin	33%	14%	17%	15%
Piedmont	78%	56%	86%	67%
T Rowe Price	14%	17%	28%	28%
State Street	7%	22%	24%	22%
Northern Trust	26%	26%	36%	35%
BlackRock	22%	25%	43%	38%

Recommendation

The objective of this search was to establish a panel of investment managers that can provide flexibility for the CRPTF with regard to standalone passive management, enhanced index mandates and transition management services as the needs for these services will vary over time. After reviewing and comparing the responses from the RFP, interviewing each firm and researching the marketplace for these services, I recommend that Rhumblin, Piedmont, T. Rowe Price, State Street Global Advisors, Northern Trust and Blackrock be retained to provide the following services:

Firm Name	Services
Rhumblin	Domestic Equity Index Fund – Standalone 85% Multi-Asset Index Funds – As needed
Piedmont	Domestic Equity Index Fund – Standalone 15% Emerging Manager Program
T. Rowe Price	Domestic Equity Enhanced Index Fund – Standalone
State Street Global Advisors	Developed International Equity Index Fund – Standalone Core Fixed Income Fund – Standalone US TIPS - Standalone Multi-Asset Index Funds – As needed Transition Management Services
Northern Trust	Multi-Asset Index Funds – As needed Transition Management Services
BlackRock	Multi-Asset Index Funds – As needed Transition Management Services

Details for the recommended firms, including responses to *Attachment M: Evaluation and Implementation of Sustainable Principles* can be found on the following pages. Also attached is a report prepared by the general consultant, Meketa.

RHUMBLINE ADVISERS

Organization

RhumbLine Advisers is a Boston-based institutional investment firm specializing in the development, management and customization of index-based products. RhumbLine was founded in October 1990 and began managing tax-exempt assets shortly thereafter. As of June 30, 2019, RhumbLine's assets under management total \$58.4 billion invested in 46 index strategies for 235 clients in 33 states.

Investment Team

RhumbLine uses a team approach in managing client accounts. The Investments team has a total of four members. As Chief Investment Officer, Alexander Ryer is responsible for overseeing the team of portfolio managers (Julie Carman Lind, Jeff Kusmierz and Antonio Ballestas) in addition to managing and trading his own client portfolios. Each one of the four Portfolio Managers is the lead on a portion of RhumbLine's accounts. The portfolio managers make the trading decisions for their client portfolios, although the process is mostly automated for equities as RhumbLine is a quantitative shop.

Investment Philosophy

As an index manager, RhumbLine's investment objective is to produce returns that closely track an underlying index. In order to do so, RhumbLine monitors portfolio holdings daily to keep the allocation of assets in line with the index. RhumbLine's investment process is quantitative and model driven. They do not use "top-down" or "bottom-up" style, nor do they use fundamental analyses. All securities within the respective index are eligible for inclusion in the portfolio unless specific restrictions are requested by the client. This ensures their ability to minimize tracking error.

Investment Process

RhumbLine utilizes a full index replication technique, whenever possible, in which the client's portfolio holds all or substantially all equities in the appropriate index (or product-specific portion of the index). Each equity allocation in the client's portfolio matches that equity's allocation in the index as closely as possible, subject to client-imposed restrictions. While full replication provides the best possible tracking of an index, it isn't always practical. RhumbLine utilizes full replication when:

- A portfolio has no restrictions on the index constituents it can hold
- The benchmark includes only large and mid-cap stocks without liquidity issues
- Clients are not sensitive to custodian charges for the number of positions and/or the number of trades
- Portfolios are sufficiently large that commission costs do not significantly impact performance

Optimization provides an approach to track an index when:

- A portfolio cannot own all constituents due to restrictions on what can be held
- The benchmark is a broad benchmark such as the Russell 3000, Wilshire 5000 or Russell 2000. In those cases, optimization allows the manager to include market impact cost considerations in determining trades.

- The client is sensitive to custodial costs for the number of positions and/or the number of trades.

Stratified sampling carves the index into divisions by industry. RhumbLine specifies what percentage of index weight to replicate and then invests the remainder so that the industry weights of the portfolio match the weight of the index. Stratified sampling may be used when:

- Accounts are less than \$25 million
- The benchmark is a broad benchmark with more than 500 index constituents
- Investing small amounts of money relative to the total value such as dividend reinvestment or cash from corporate actions.

The choice of full replication versus optimization or sampling requires a full understanding of a portfolio's size, cash flows and the client objectives. Optimization will deliver excellent tracking over longer horizons but may lead to somewhat higher tracking over shorter horizons. All aspects of a portfolio must be understood before making this decision.

Legal and Regulatory Disclosure (provided by Legal)

Through its disclosure, RhumbLine Advisers ("RhumbLine"), states (i) it has no material legal or non-routine regulatory matters, (ii) no material claims under its fidelity, fiduciary or E&O insurance policies, and (iii) no ongoing internal investigations to report. RhumbLine states it has adequate procedures in place to undertake internal investigations of its employees, officers and directors. RhumbLine's ADV is consistent with its disclosure.

Environment, Social & Governance Analysis ("ESG") (provided by Policy)

The Assistant Treasurer for Policy's Evaluation and Implementation of Sustainable Principles review is attached.

**SUMMARY OF RESPONSES FROM
RHUMBLINE ADVISERS**

**TO ATTACHMENT M: EVALUATION AND IMPLEMENTATION OF SUSTAINABLE
PRINCIPLES**

SUBMITTED BY THE TREASURY'S POLICY UNIT

RhumbLine's disclosure conveys a recognition that sustainable investing can be a source of both return enhancement and risk management. The firm described its approach to ESG considerations as educating clients and internal decision makers on the importance of ESG factors, participating in ESG conferences, and ultimately incorporating sustainable investing concepts into its investment decision making process.

While the firm's responses do not demonstrate a robust integration of ESG factors, RhumbLine disclosed that it has recently contracted with Thomson Reuters/Refinitiv for ESG metrics on all of its holdings, and that it is committed to incorporating these data into trade decision making as well as monthly reporting to its clients. Presently, the firm may consider ESG as one of many "tiebreaker" factors that may influence an investment decision.

RhumbLine outsources its company's proxy voting to ISS, and does not engage directly with companies. The firm is not a signatory to the U.N. Principles of Responsible Investment, as the company is strictly an index manager and views the associated fee as cost prohibitive. Similarly, RhumbLine is not a signatory or member of other sustainability/investment coalitions or initiatives.

Although RhumbLine does not currently exclude index constituents based on ESG principles, the firm does have experience with client-led exclusion through customized investments. The firm's first customized account opened in 1994, and customized business now accounts for approximately 25% of its assets under management. During this timeframe, the firm has gained experience in managing portfolios that consider SRI, tobacco and the Sandy Hook Principles, among other restrictions.

Overall, RhumbLine's disclosure acknowledges the significant of ESG and demonstrates a commitment to integrate greater ESG consideration in the future.

PIEDMONT INVESTMENT ADVISORS

Organization

Piedmont Investment Advisors, Inc., based in Durham, NC, is a wholly owned subsidiary of FIS Group. On August 31, 2018, FIS Group acquired Piedmont's predecessor, Piedmont Investment Advisors, LLC ("PIA"). The firm is 100% owned by current active employees with 63% by the founder of FIS Group, Tina Byles Williams and 32% by an ESOP. As of June 2019, Piedmont managed \$4.9 billion in firm assets, with \$351 million in the Passive S&P 500 Index Strategy.

Investment Team

There are two portfolio managers, Richard Mills and Amit Sanyal, who manage the passive strategies. They are supported by a Quantitative Associate and a Trader. The Quantitative Equity team interacts closely with the fixed income team and gains different insights and perspectives from them to understand the macroeconomic picture which serves as the backdrop for investment strategies.

Investment Philosophy

The investment philosophy for passive/index products is based on the fact that clients choose indexing for three main reasons. First, they want broad-based exposures to segments of the equity markets through their choice of a benchmark. Second, they want predictable and minimal dispersion of returns in their portfolio versus their chosen benchmark. And third, they want this capability at a very low cost. Piedmont's philosophy is to manage every passive mandate to meet these three objectives by using the most appropriate methodology after considering the size of the assets, liquidity of the selected benchmark, and tracking error tolerance.

Investment Process

The portfolio construction process is based on full replication so that the tracking error of the portfolio is minimal, and the portfolio is self-rebalancing, allowing turnover to be in line with the benchmark and transaction costs to remain very low.

The portfolio is compared and tracked versus the benchmark throughout each trading day to ensure that it reflects the index as closely as possible. Transactions resulting from benchmark changes or changes in cash levels (as a result of dividend accruals) are forecasted weeks ahead, monitored daily, planned ahead of time, and executed at the lowest cost possible.

Data from the index providers is used to construct and monitor the portfolios. Piedmont uses Factset to ensure that the portfolio's sector and industry weights and fundamental characteristics reflect the benchmark's sector and industry weights and fundamental characteristics. Axioma's Risk Model is used to measure predicted tracking error and ensure that the portfolio's predicted tracking error versus its benchmark remains below 0.05%.

The process of full replication ensures that all potential sources of risk in the portfolio relative to the benchmark are minimized during the portfolio monitoring process on a day-to-day basis. Stock weights, industry weights, sector weights, fundamental factor weights, and risk factor weights are all monitored to ensure that there are minimum possible differences between the portfolio and the benchmark in these areas. The portfolio, therefore, has almost no potential sources of variance relative to the benchmark.

Legal and Regulatory Disclosure (provided by Legal)

In its disclosure to the Office of the Treasurer, Piedmont Investment Advisors, Inc. (“Piedmont”), states (i) it has no material legal or non-routine regulatory matters, (ii) no material claims under its fidelity, fiduciary or E&O insurance policies, and (iii) no ongoing internal investigations to report.

Piedmont states it has adequate procedures in place to undertake internal investigations of its employees, officers and directors. Piedmont has an Employee Handbook and Code of Ethics Policy that all employees must adhere to as a condition of employment. Piedmont’s Chief Human Resources Officer and Chief Compliance Officer may conduct internal investigations of any employee, officer and director.

Environment, Social & Governance Analysis (“ESG”) (provided by Policy)

The Assistant Treasurer for Policy’s Evaluation and Implementation of Sustainable Principles review is attached.

**SUMMARY OF RESPONSES FROM
PIEDMONT INVESTMENT ADVISORS, INC.**

**TO ATTACHMENT M: EVALUATION AND IMPLEMENTATION OF SUSTAINABLE
PRINCIPLES**

SUBMITTED BY THE TREASURY'S POLICY UNIT

Piedmont described the incorporation of ESG considerations into its investment processes for active equity products as “holistic.” By contrast, for passive mandates, the firm fully replicates the index chosen by the client and does not consider any ESG issues unless otherwise directed by their client.

The primary source of ESG data used by the firm is sourced from Sustainalytics, which is then factored into its quantitative investment algorithm. Additionally, the firm accesses ESG-related research and insights via ESG index providers, brokerage firms, and investment research organizations such as the CGA Institute. The company reports that potential investments with severe risk of material impact driven by ESG factors are excluded from their buy universe. For passive products, exclusionary restrictions are incorporated at the time of portfolio construction at the direction of the client.

As far as further ESG consideration and integration, Piedmont does not employ dedicated ESG analysts. The firm’s proxy voting follows ISS guidelines, and ISS votes proxies on Piedmont’s behalf (unless otherwise directed by clients).

Piedmont is not a signatory to the U.N. Principles of Responsible Investment (although its disclosure indicates that they are considering membership), and they are not affiliated with any other sustainability-related initiatives or groups.

Overall, Piedmont’s disclosure on ESG was much less developed than those of its peers responding to the CRPTF’s RFP for passive investment management services, particularly with respect to the resources it expends for staff and ESG-related research.

T. ROWE PRICE ASSOCIATES

Organization

T. Rowe Price (NASDAQ: TROW) is a large, multi-national asset management company based in Baltimore, MD. The company was founded in 1937 and provides portfolio management, research, trading, client servicing and marketing. As of September 30, 2019, T. Rowe Price's assets under management totaled \$1 trillion with \$33 billion under management in the US Structured Research Equity Strategy.

Investment Team

The US Structured Research Equity Strategy team, consisting of 37 professionals, is led by Eric Veiel, Head of US Equity and co-head of Global Equity. The investment team consists of selected equity research analysts and a portfolio oversight team. Each analyst makes final buy and sell decisions for their portion of the portfolio. The portfolio oversight team is responsible for assigning coverage to the analysts, mentoring and developing the analysts, managing inter-analyst activity, and ensuring adherence to portfolio constraints and risk controls.

Investment Philosophy

T. Rowe Price's overall approach is one of style consistency and risk aversion, achieved through broad diversification and a valuation consciousness to security selection. Adherence to each portfolio's investment mandate even when a particular style of investing falls out of favor helps them meet their clients' objectives. This long-term, conservative approach also allows them to have low portfolio turnover, which reduces overall trading costs.

T. Rowe Price believes that an actively managed portfolio of carefully selected stocks, with overall risk characteristics similar to the S&P 500 Index, can produce consistent excess return relative to the index. More specifically, their philosophy consists of the following beliefs:

- Proprietary, fundamental research is key to selecting stocks that will outperform their peers—and avoiding those that will lag.
- Many investors tend to overreact to both good and bad news about a stock. For more disciplined investors, this behavior provides opportunities to buy stocks at low prices and sell them at high prices.
- History has shown that style, capitalization, and sector leadership run in cycles that are difficult for even the most seasoned investors to anticipate. Their investment philosophy focuses on a long-term approach.

Investment Process

The investment process is driven by bottom-up stock selection based on rigorous fundamental research. The analysts overweight the most attractive stocks, underweight the least attractive stocks, and opportunistically add high-conviction, non-index securities from their coverage area. The research team analyzes each company's growth prospects, balance sheet, and valuation. Sources for this data include annual reports, conference presentations, and online industry databases and analytical tools, such as FirstCall and FactSet. Meeting with company management is considered a core strength of their research.

The process leverages their fundamental research.

- Allocate Capital. Capital is allocated to the analysts in proportion to the weight of the stocks they follow within the S&P 500 Index.
- Select Stocks. Each analyst makes buy and sell decisions within his or her coverage.
- Construct the Portfolio. The analysts' aggregate buy and sell decisions result in a 200-275 stock portfolio with characteristics similar to those of the benchmark.
 - The portfolio is constructed within the overall constraint of a less than 1.75% predicted tracking error relative to the S&P 500 Index.
 - Sector and industry exposures will range +/- 1.5% and +/- 1% of the index weight.
 - The portfolio also controls for active position sizes for S&P 500 Index and non-benchmark stocks.
 - The maximum position size for non-S&P 500 Index names is 0.4%, although they will own up to a 0.5% position if the analyst has rated the stock a strong buy. The aggregate weight of all non-benchmark holdings will be 10% or less of total portfolio assets.

The portfolio is considered to be fully invested, with cash reserves generally 1% or less of total market value. Cash may be equitized using futures and exchange-traded funds (ETFs).

Performance

The T. Rowe Price product under consideration is an enhanced index product that has been in the CRPTF portfolio for many years. The most recent actual performance for our portfolio, net of fees, is below.

	1 YEAR	3 YEARS	5 YEARS	7 YEARS
T. Rowe Price	33.0%	16.5%	12.5%	15.3%
<i>S&P 500 Total Return Index</i>	31.5%	15.3%	11.7%	14.7%
Value Add	1.5%	1.2%	0.8%	0.6%

Legal and Regulatory Disclosure (provided by Legal)

In its disclosure to the Office of the Treasurer, T. Rowe Price Associates, Inc. ("T. Rowe"), discloses a suit filed in April 2016 in the Northern District of California, alleging breach of fiduciary duty under the Investment Company Act. Specifically, the case involves shareholders in eight mutual funds who allege that the rates they were charged were higher for investment management than other T. Rowe clients for the same services. The case was transferred to the District of Maryland and is in the discovery phase. T. Rowe also discloses a suit filed on February 14, 2017 in the District of Maryland. The former employee who brought the suit alleges breaches of fiduciary duty under ERISA with regard to the retirement plan. The court denied T. Rowe's motion to dismiss and the case is in the discovery phase. With respect to both matters, T. Rowe states there is no material impact on the firm. T. Rowe states (i) it has no material claims under its fidelity, fiduciary or E&O insurance policies, and (ii) no ongoing internal investigations to report.

T. Rowe states it has adequate procedures in place to undertake internal investigations of its employees, officers and directors. The Human Resources department at T. Rowe is responsible for overseeing complaints and taking action.

Environment, Social & Governance Analysis (“ESG”) (provided by Policy)

The Assistant Treasurer for Policy’s Evaluation and Implementation of Sustainable Principles review is attached.

**SUMMARY OF RESPONSES FROM
T. ROWE PRICE ASSOCIATES, INC.**

**TO ATTACHMENT M: EVALUATION AND IMPLEMENTATION OF SUSTAINABLE
PRINCIPLES**

SUBMITTED BY THE TREASURY'S POLICY UNIT

T. Rowe Price disclosed that the firm integrates ESG factors at both the analyst and portfolio level, from pre-investment research to ongoing assessment throughout the life of the investment. Their analysis includes the identification and monitoring of environmental and social data, risks, and tailwinds in portfolio construction. T. Rowe Price also directly engages with company boards and participates in proxy voting as an extension of its ESG guidelines.

T. Rowe Price employs 13 individuals who are dedicated to the firm's ESG efforts and generally work to embed specific data into their financial models, overlay scenario analysis onto their base-case models, and broadly consider risk across portfolios. The company's Governance Team is responsible for assisting their analysts and portfolio managers in considering the impact of governance issues on existing and potential investments, as well as engages companies on corporate governance issues and facilitates proxy voting. Their Responsible Investing (RI) Team focuses on environmental and social factors by conducting analysis on individual securities and across portfolios.

In addition to utilizing third party sources of environmental and social data, T. Rowe Price has integrated more in-house analysis through its proprietary Responsible Investing Indicator Model (RIIM), which analyzes environmental, social, and ethical profiles of their investments and integrates third party data from vendors such as Sustainalytics, RepRisk, ISS and MSCI.

In addition to being a signatory of the UN Principles for Responsible Investment since 2010, the firm is a member or signatory of a number of sustainability-related groups, including Carbon Disclosure Project and Council of Institutional Investors.

T. Rowe Price's disclosure reflects a thorough integration of ESG that is both institutionalized through team oversight and codified through investment modeling.

STATE STREET GLOBAL ADVISORS

Organization

State Street Global Advisors (SSGA) is a large, multi-national asset management company based in Boston, MA. Founded in 1978 as the Asset Management Division of State Street Bank and Trust Company, SSGA was established to provide institutional investment management services focused on equity indexing and cash. In 1995, all of State Street's investment management services were reorganized under SSGA. The firm's parent company, State Street Bank and Trust Company (NYSE: STT), has been incorporated as a Massachusetts trust company since 1891. As of September 30, 2019, SSGA's assets under management totaled \$2.9 trillion with \$1 trillion under management in the Global Equity (\$998 billion) and Global Fixed Income strategies (\$43 billion).

Investment Team

The Global Equity Beta Solutions team, consisting of 88 professionals, is led by Lyn Blake, Global CIO, Global Equity Beta Solutions. The team includes approximately 60 index equity portfolio managers with an average tenure of approximately 20 years. The regional teams are structured with each portfolio manager tasked with managing a cross section of strategies and investment vehicles. In addition, the portfolio management team works closely with the global trading team consisting of over 30 members located in three regional centers – Boston, London, and Hong Kong providing 24-hour local market trading coverage.

The Global Fixed Income Index Strategies, consisting of 36 professionals, is led by Venky Venkataramani, Global Head of Index Strategies. Portfolio managers are supported by additional dedicated fixed income investment professionals in Trading, Research, Risk and Portfolio Strategy. The Fixed Income Index Strategies team has international investment centers providing global coverage. The North American Fixed Income Index Strategies team is comprised of experienced portfolio managers spread across 3 distinct sectors: Securitized /Aggregate, Credit and US Rates. The EMEA team is split into: Global Rates/Aggregate, Credit and Emerging Markets.

Investment Philosophy

State Street Global Advisors' Indexing Equity capabilities are based on the following beliefs:

- Providing cost-efficient market exposure helps their clients achieve their long-term investment objectives.
- A culture that promotes teamwork, accountability and stability is key to meeting their client's performance objectives.
- A globally consistent investment process and portfolio management system enables them to efficiently manage portfolios and minimize risks for our clients.
- To deliver the best possible solutions for their clients, they innovate through research. Research is a core focus for the firm and a core focus for the indexing team.
- As long-term stewards of capital, they engage with investee companies and encourage responsible investing to ensure long term shareholder interests are preserved.

In Indexed Equities, they aim to deliver to each client the returns and characteristics of their target index, ensuring that their chosen market exposure is achieved in a cost-efficient manner.

State Street Global Advisors' Fixed Income Index capabilities are based on the belief that the return streams of fixed income indexes can be most efficiently replicated through portfolios

constructed using the stratified sampling method. Stratified sampling can capture a wide range of the index holdings, but the most important factor is the difference between the sampled portfolio's characteristics and those of the index.

They also believe this investment process and approach to be sustainable and repeatable. Processes are well established and have been producing the expected results since inception.

Investment Process

Global Equity:

In Indexed Equities, they aim to deliver each client the returns and characteristics of their target index, ensuring that the chosen market exposure is achieved in a cost-efficient manner. By retaining a high sensitivity to costs, they aim to prevent erosion of their investors' wealth. In practice, this means the following:

Construct

- Determine indexing methodology or management style
- Consider various factors such as portfolio size, benchmark breadth, liquidity, cost, ESG factors and tracking error
- Construct the optimal portfolio – they have two main routes for portfolio construction: full to near-full replication and optimization

Analyze

- Daily evaluation of portfolio deviations versus the benchmark
- Incorporate flows, if applicable
- Assess impact of potential changes in index and client flows in portfolio

Implement

- Determine required changes to the portfolio, if any
- Evaluate exposure alternatives to minimize transaction costs tracking error
- Construct trade and submit instructions to the trading team

Review

- Pre and post-trade compliance checks and independent daily risk oversight review
- Conduct monthly performance and attribution reconciliation
- Quarterly performance review and oversight

Global Fixed Income:

Their investment process seeks to deliver the same risk as the index but with intelligent, skillful implementation. Given the fragmented nature of the global bond market, fixed income index investing has always required a trade-off between index relative risk and transaction costs. The fixed income indexing investment process consists of four stages:

Identify the sources of risk

- The index construction methodology, inclusion and pricing criteria, treatment of currency hedges, treatment of interest and principal payments etc., are determined for each index that we manage against. The five main factors that impact portfolio risk are contributions and redemptions, foreign exchange hedging, transaction costs, pricing sources and taxes.

Portfolio construction

- In most instances full replication of the index is not practical. Almost all strategies will be managed based on a stratified sampling technique that balances tracking error, liquidity and transaction costs to build a portfolio with the same characteristics as the index.
- Stratified sampling is based on dividing an index into manageable risk dimensions: currency, yield curve, duration, sector, credit quality, issuer and liquidity; and the portfolio is constructed to be aligned to the index across these dimensions in a cost-efficient manner

Implement trades efficiently

- The investment management team relies heavily on the expertise of the trading desk and their knowledge of government, credit, securitized and emerging markets to inform the security selection decision. When making sampling decisions they do not express any currency or duration views.
- They have dedicated trading desks for fixed income at their investment centers in Boston and London

Ongoing portfolio management and exposure monitoring

- Risk control is integral and explicit in the investment process and is based on a top-down mechanism for implementing and monitoring risk levels. Continuous portfolio maintenance and risk management is necessary as bond indices change continuously, with new bonds being issued and bonds maturing on a regular basis.
- The Independent Risk Management Team also uses ex-ante tracking error as an indication of the overall portfolio's exposure to the index.

Legal and Regulatory Disclosure (provided by Legal)

In its disclosure to the Office of the Treasurer, State Street Global Advisors Trust Company ("SSGA"), states that its parent, State Street Corporation is involved in disputes, litigation and regulatory matters. Several other subsidiaries of State Street Corporation were ordered to pay a \$32.2 million fine to the SEC in 2017, as a result of findings that the State Street subsidiaries (which do not include State Street Global Advisors Trust Company) carried out a scheme to defraud six transition management customers from February 2010 to September 2011, by charging those customers hidden and unauthorized mark-ups and commissions beyond the fees, mark-ups, or commissions that the customers had agreed to pay on trading in U.S. and European securities. SSGA states that it does not disclose claims against its insurance policy for confidential reasons. There are no ongoing internal investigations to report that would materially impact SSGA's ability to provide the products and services under an agreement with the State.

SSGA states it has adequate procedures in place to undertake internal investigations of its employees, officers and directors.

Environment, Social & Governance Analysis ("ESG") (provided by Policy)

The Assistant Treasurer for Policy's Evaluation and Implementation of Sustainable Principles review is attached.

**SUMMARY OF RESPONSES FROM
STATE STREET GLOBAL ADVISORS TRUST COMPANY**

**TO ATTACHMENT M: EVALUATION AND IMPLEMENTATION OF SUSTAINABLE
PRINCIPLES**

SUBMITTED BY THE TREASURY'S POLICY UNIT

SSGA considers ESG factors at the investment team-level, with differentiation for asset class, region, and other factors. The firm also offers a variety of bespoke investment styles, including exclusionary screening, thematic investing, impact investing, ESG integration, and asset stewardship. Its team of corporate governance professionals engage directly with companies to develop and enhance in-house corporate governance guidelines, analyze governance issues on a case-by-case basis, and exercise the firm's proxy voting rights. The company has worked extensively around the issues of board structure and governance and, specifically, board diversity.

SSGA's ESG research team focuses on identifying and capturing ESG-driven risks and opportunities, a Global Equity Beta Solutions (GEBS) Team for passive investing and portfolio construction, and an Active Quantitative Equity (AQE) Team which evaluates all stocks in their investable universe. Both GEBS and AQE research ESG integration.

State Street is a signatory to the U.N. Principles of Responsible Investment, and is a member of several ESG-related organizations and consortiums, including the Task Force on Climate-related Financial Disclosures; CERES, Carbon Disclosure Project and Council of Institutional Investors. The company uses external data to inform proxy engagements, reporting, and investments, including ISS, MSCI, Glass Lewis, and other external providers.

SSGA's responses demonstrate a comprehensive understanding of ESG factors' impact on long-term performance, a commitment to the integration of material ESG factors, and the importance of using data from multiple sources.

NORTHERN TRUST

Organization

Northern Trust is a large, multi-national, publicly traded asset management company based in Chicago, IL. Northern Trust was founded in 1889 and is a leading provider of wealth management, asset servicing, asset management and banking to corporations, institutions, affluent families, and individuals. Northern Trust Asset Management, the asset management business of Northern Trust Corporation (NASDAQ: NTRS), is a global investment manager. As of June 2019, Northern Trust managed \$975 billion in firm assets, with \$526 billion in developed/emerging equity indexing strategies.

Investment Team

In aggregate, there are 34 dedicated portfolio managers across the index platform globally, of which 26 focus on equities and 8 on fixed income strategies.

The equity index team is supported by a dedicated 13 person global trading operation in Chicago, London and Hong Kong. Index equity portfolios are managed by the Global Index Equity Management team led by Jake Weaver. The Chicago-based Global Index Equity team led by Brent Reeder, Director of US Index Equity, is responsible for the Index Equity strategies offered to US clients. Additionally, the index equity team is supported by the Quantitative Research and Strategy team, led by Michael Hunstad, Head of Quantitative Strategies.

David Alongi, in his role as Director of Fixed Income Index Management, is responsible for Northern Trust's fixed income index portfolios. Index funds are managed following the structure of their underlying indices by a team of 8 portfolio managers, supported by 21 credit/sector analysts. Portfolio managers, operating within the team structure, have responsibility for market sectors (e.g., governments, corporates, MBS, etc.).

Investment Philosophy

Through rigorous research and diligent analysis of market conditions, Northern Trust continually works to identify a cost-efficient implementation for client portfolios including a thorough understanding of the total trading cost spectrum, an ability to manage index change effectively, and the insights to utilize a range of trading options appropriately.

Investment Process

Northern Trust's Intelligent Indexing® approach results in portfolios that are replicated where appropriate and optimized where sensible. To accomplish this objective they employ an approach to portfolio construction and implementation around index events, index changes and client flows. This approach is implemented within a multi-dimensional risk management framework that constrains at the security, sector, country and Axioma risk factor level. Intelligent Indexing® is based on the following key initiatives:

- A customized approach that results in replicated portfolios where appropriate and sampled strategies where identified as appropriate by the optimization process.
- Dynamic investment process that employs technology to maximize liquidity and minimize transaction costs.
- Innovative index change strategies that emphasize the minimization of wealth erosion.
- Multi-dimensional risk management that tightly constrains portfolios at the region, country, sector, industry, stock and risk factor level.

Legal and Regulatory Disclosure (provided by Legal)

In its disclosure to the Office of the Treasurer, Northern Trust Investments, Inc. (“NTI”), states (i) it has no material legal or non-routine regulatory matters, (ii) no material claims under its fidelity, fiduciary or E&O insurance policies, and (iii) no ongoing internal investigations to report. NTI commented that NTI and its affiliates faced no significant regulatory settlements or fines in the last five years. In that period, all such entities paid a total of less than \$1 million globally in fines, penalties, or settlements with regulators or governmental authorities.

NTI states it has adequate procedures in place to undertake internal investigations of its employees, officers and directors. NTI has a Compliance Program and Code of Ethics, which establishes general principles governing the conduct of employees in connection with its services.

Environment, Social & Governance Analysis (“ESG”) (provided by Policy)

The Assistant Treasurer for Policy’s Evaluation and Implementation of Sustainable Principles review is attached.

**SUMMARY OF RESPONSES FROM
NORTHERN TRUST INVESTMENTS, INC.**

**TO ATTACHMENT M: EVALUATION AND IMPLEMENTATION OF SUSTAINABLE
PRINCIPLES**

SUBMITTED BY THE TREASURY'S POLICY UNIT

Northern Trust's disclosure suggests a strong belief that the appropriate management of environmental, social, and governance factors contribute to long-term financial value. The firm's Sustainable Investment Team is responsible for ESG research, innovation, product development, and product management across asset classes, and generally focuses on ESG integration across their investment processes. The team works closely with clients, quantitative researchers, and specialized portfolio managers to develop and implement sustainable investing strategies.

For their Quantitative Active product line, Northern Trust has developed a proprietary ESG scoring system that considers ESG factors alongside other quantifiable variables. Such sustainable investment data are centralized within a company database and are available to all relevant staff, including for the purposes of portfolio construction and investment management. The company reports that the use of several tools contribute to holistic portfolio construction and that their stewardship activities encompass a spectrum of sustainable approaches, from exclusionary to integration to thematic investing.

As part of their investment process, Northern Trust engages with management teams of potential portfolio companies in discussions around their long-term strategies, corporate governance, sustainability, and management incentive programs. The firm has a Proxy Voting and Engagement Team which is staffed by two full-time specialists and is supported by a 12-member Equity Research Team. Both teams' work is informed by third party ESG data from Bloomberg, FactSet, MSCI, and ISS, along with sell-side industry research and direct engagement experience. Along with active stances on environmental issues and say on pay, Northern Trust's disclosure highlights their work on board diversity.

Northern Trust has been a signatory of the U.N.'s Principles of Responsible Investment since 2009. The firm is an active member of the Sustainability Accounting Standards Board and is also a member of, or signatory of, several sustainability-related initiatives, including Carbon Disclosure Project, Climate Action 100+, and Council of Institutional Investors.

Overall, Northern Trust's responses demonstrate a thorough consideration of ESG factors and an integration of those factors into their research and investment decision making processes.

BLACKROCK

Organization

BlackRock is a large, publicly traded, multi-national asset management company based in New York. The company was founded in New York City in 1988 by 8 partners, 5 of whom remain active in the firm today. BlackRock (NYSE: BLK) went public with broad employee ownership in 1999. Over the past four decades, BlackRock has become the world's largest manager of index assets, with over \$4.4 trillion under management, as of June 2019, across over 850 unique benchmarks.

Investment Team

BlackRock's indexing practice is comprised of two teams, the ETF and Index Investments ("EII") Team and the Systematic Fixed Income ("SFI") Team.

The EII Team is led by Salim Ramji, Senior Managing Director and Global Head of EII Strategies, who has 21 years of investment experience and has been with BlackRock for 5 years. Manish Mehta, Managing Director, leads the Investments, Products and Markets group within EII and reports to Salim. Alan Mason, Managing Director, is Head of Americas Portfolio Engineering for EII and reports to Manish. He is based in San Francisco along with 60 portfolio engineers across Institutional and iShares, 8 investment strategists, and a global equity trading team of approximately 50 traders as of 30 June 2019. In addition to the portfolio engineers and traders, there is a team of equity market researchers dedicated to research.

All US index fixed income strategies are managed by BlackRock's Core Portfolio Management team which is a part of SFI. The Core Portfolio Management team is led by Scott Radell, Managing Director, who has 24 years of investment experience and has been with BlackRock for 14 years. All of BlackRock's index fixed income strategies are managed using a team approach in the areas of strategy, portfolio management, client service, research, trading and operations support.

Investment Philosophy

Central to BlackRock's index offerings is the philosophy of Total Performance Management. Their approach seeks to deliver precise and efficient investment outcomes by optimally managing and balancing return, risk and cost. The return focus seeks to deliver consistent and reliable returns in line with the benchmark, utilizing deep knowledge of financial markets and indices, and enhanced returns from stock lending. Their risk-controlled process utilizes analytics and investment tools from their Aladdin platform to deliver optimal tracking outcomes. Their global trading platform seeks low costs, along with optimal access to liquidity.

Investment Process

Equity: EII portfolio engineers decide on corporate actions such as dividends, stock splits, spinoffs, rights offerings and mergers & acquisitions. The investment team works in conjunction with teams across BlackRock. The investment process is built on benchmark knowledge, portfolio construction, efficient trading, and performance & oversight.

Benchmark knowledge is utilized as portfolio engineers combine their capital market expertise with the insights of the Index Research Group (IRG) to evaluate thousands of index events and corporate actions each year. The engineers and IRG employ detailed knowledge of index

methodologies, predict and project index changes, seek optimal treatment of corporate actions, and develop trade strategies to incorporate index events.

In portfolio construction, portfolio engineers make decisions around portfolio structure (optimization vs. full replication), cash equitization, trading around index changes, making corporate action elections, and investing/divesting based on client and participant instruction. Portfolios are constructed using BlackRock's proprietary Portfolio Construction and Index Pro applications which provide a seamless platform where all details pertaining to portfolio engineering and trades are handled electronically.

Efficient trading is executed globally as over 50 equity traders spanning across four trading hubs enable specialization in local markets. The team leverages traders' local market expertise, and benefits from real-time execution in respective time zones. Common trading technology across the globe enables the team to "pass the book" from time zone to time zone.

The performance & oversight focus results in all index portfolios undergoing daily portfolio engineering review. There is also a monthly Investment Review Committee meeting with senior management, which reviews any portfolios that performed outside of tolerance. Additionally, BlackRock's Risk & Quantitative Analysis Group performs a separate, independent review of portfolios.

Fixed income: SFI's investment process does not attempt to explicitly match the benchmark's average statistics. Instead, it matches the distribution of its statistics which allows portfolio performance to track the index regardless of how the relationships among the various factors change.

The stratified sampling process used to construct the portfolios is essentially a top-down disaggregation of the index into smaller units or cells, each of which represents a "sub-index". The risk dimensions used to disaggregate an index vary by sector. When completed, all bonds in the index will have been assigned a cell and all bonds within a cell will have similar characteristics. Next, the portfolio is constructed by selecting representative bonds from these cells that will match each cell's weight (market value) and duration in the index. Finally, it is required that each cell in the portfolio be well diversified in terms of issuer.

Portfolios will be constantly monitored throughout the month, and not just when the index rebalances, as events like cashflows can have an impact on a portfolio's tracking error relative to the index.

Legal and Regulatory Disclosure (provided by Legal)

BlackRock Institutional Trust Company, N.A. ("BlackRock Institutional") is the contracting entity for investments in its Collective Trust Funds. BlackRock Financial Management, Inc. ("BlackRock Financial") is the contracting entity for separate accounts.

BlackRock Institutional discloses one regulatory matter from 2014, where it entered into an agreement with the SEC to resolve allegations relating to three alleged violations of an SEC regulation prohibiting short sales of an equity security during the restricted period preceding a public offering. BlackRock Institutional settled the matter with the SEC for \$1.7 million and agreed to disgorge profits from each of the violations and to pay interest and a civil penalty.

There are no regulatory or legal matters with respect to BlackRock Financial within the past five years. There are a number of regulatory matters concerning BlackRock Financial and BlackRock Institutional's parent company and other BlackRock subsidiaries. However, these matters seem fairly typical for a company of this size.

Both BlackRock Institutional and BlackRock Financial state that they have adequate procedures in place to undertake internal investigations of its employees, officers and directors. BlackRock maintains Code of Business Conduct and Ethics, and a Global Personal Trading Policy.

Environment, Social & Governance Analysis ("ESG") (provided by Policy)

The Assistant Treasurer for Policy's Evaluation and Implementation of Sustainable Principles review is attached.

**SUMMARY OF RESPONSES FROM
BLACKROCK FINANCIAL MANAGEMENT, INC.**

**TO ATTACHMENT M: EVALUATION AND IMPLEMENTATION OF SUSTAINABLE
PRINCIPLES**

SUBMITTED BY THE TREASURY'S POLICY UNIT

BlackRock is widely known for having a robust ESG policy, which is evident in its disclosure. The firm has been a signatory of the U.N. Principles of Responsible Investment since 2008. The firm's assessment of material ESG factors is a fundamental part of all investment decisions, including public equity, public debt and real assets.

BlackRock's Investment Stewardship Team currently consists of over 45 staff who are responsible for advocating for corporate governance best practices at their portfolio companies, and the firm shared its intent to expand its team in the near term. Annually, the firm engages with approximately 2,000 companies a year on a range of ESG issues.

The firm has conducted research studies on the cost of climate change and how portfolios should adapt to such change. They combine third party and internal research for investment analysis, and primarily use Aladdin, the firm's portfolio and risk monitoring platform available to all of the firm's analysts and fund managers, to inform security analysis and investment due diligence.

BlackRock participates in a number of formal coalitions and shareholder groups aiming to encourage responsible share ownership. These include Investor Network on Climate Risk; Carbon Disclosure Project; Council of Institutional Investors; Institutional Investors Group on Climate Change; International Corporate Governance Network, and a number of other organizations with which CRPTF also collaborates including CERES.

Overall, BlackRock's disclosure reflects a robust integration of ESG, as well as a commitment to expanding its ESG integration through the firm's Investment Stewardship Team.