COLORADO PERA
STEWARDSHIP REPORT

June 2018

COLORADO PERA®

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A Message from PERA Management

We are pleased to present this report on Colorado PERA's investment stewardship and sustainability. This report discusses environmental, social, and governance considerations for investors, as well as PERA's approach to seeking financial sustainability through investment stewardship.

Stewardship has always been the foundation of PERA's mission. PERA manages approximately $48 billion in assets on behalf of more than 550,000 members. That is a tremendous responsibility, and one we accept whole-heartedly. With a duty to ensure the retirement security of all our members, we are committed to the financial sustainability of the Fund.

PERA's fiduciary duty is an obligation to invest in opportunities that provide the best risk-adjusted returns. In prudence with our duty, we evaluate all appropriate investments that fall within the parameters set forth by the PERA Board of Trustees. Within those parameters there may be opportunities to invest in firms that offer financial sustainability and also practice environmental, social, and governance stewardship. We recognize that global stewardship may have potential to economically impact businesses - for better or worse. Companies that effectively manage stewardship risks and opportunities may demonstrate innovation, leadership, alignment with stakeholders, and financial success. These are qualities of companies that are built to last, and which present potential for increased financial value.

Across all asset classes within the Fund, there is material financial value in companies and partnerships that integrate global stewardship practices in their business models. In the Opportunity Fund, PERA's investment in timberlands is also an investment in reforestation efforts. In our Real Estate portfolio, we have investment buildings certified by ENERGY STAR® and the *LEED® green building program.* We have an emphasis within our Private Equity portfolio on commitment to the local economy through its partnership with the Colorado Mile High Fund. In public markets, PERA's Global Equity and Fixed Income teams incorporate the impact of global stewardship in their fundamental analysis. Whether through green bonds or reforestation efforts, PERA has found opportunities to invest in assets and companies that have characteristics which contribute to sustainability.

We acknowledge that global stewardship is just one of many factors to consider in determining an investment's comprehensive value. The unique investment opportunities we have found in global stewardship have emerged from our expansive investible universe. Though our investible universe is strategically broad, our investment selections are narrowly focused. Ultimately, we believe the best investments for long-term financial sustainability are found in companies and partnerships that practice strong stewardship over all aspects of business.

PERA's approach to investment stewardship centers on our influence as the voice of our membership in the global marketplace. We use our voice to advocate for stakeholder value through ongoing meetings with corporate managers, investment partners, and professional and regulatory Boards. We couple open dialogue with our proxy voting policy to reinforce our commitment to strong corporate governance. Whether voting on issues related to Board appointments, director compensation, financial transparency, social impact, or increased disclosure on climate change

regulations, PERA remains actively engaged. We believe we can increase accountability through our engagement. More accountability means higher standards of stewardship. And better stewardship can mean stronger financial sustainability.

PERA will continue to evaluate opportunities for financial sustainability through our investment stewardship. First and foremost, we will remain steadfast in our commitment to investments that provide the best risk-adjusted returns for the long-term sustainability of the Fund and the members we serve.

Sincerely,

Ron Baker
Interim Executive Director of Colorado PERA

Amy C. McGarrity
Chief Investment Officer

Why Global Stewardship Matters to Investors

As an institutional investor, PERA is interested in the financial risks and opportunities presented by environmental, social, and governance (ESG) stewardship. In this section we discuss market interest in sustainable investing, potential merits of global stewardship in competitive business, and obstacles for investors in assessing the financial impact of sustainability.

SUSTAINABLE INVESTING IS A GROWING COMPONENT OF THE GLOBAL ECONOMY

As market climates evolve across changing political, social, environmental, and economic landscapes, sustainability is a growing theme in the investment industry. Investors, consumers, regulatory authorities, and businesses are becoming increasingly interested in global stewardship and how it corresponds to best practice for successful firms.

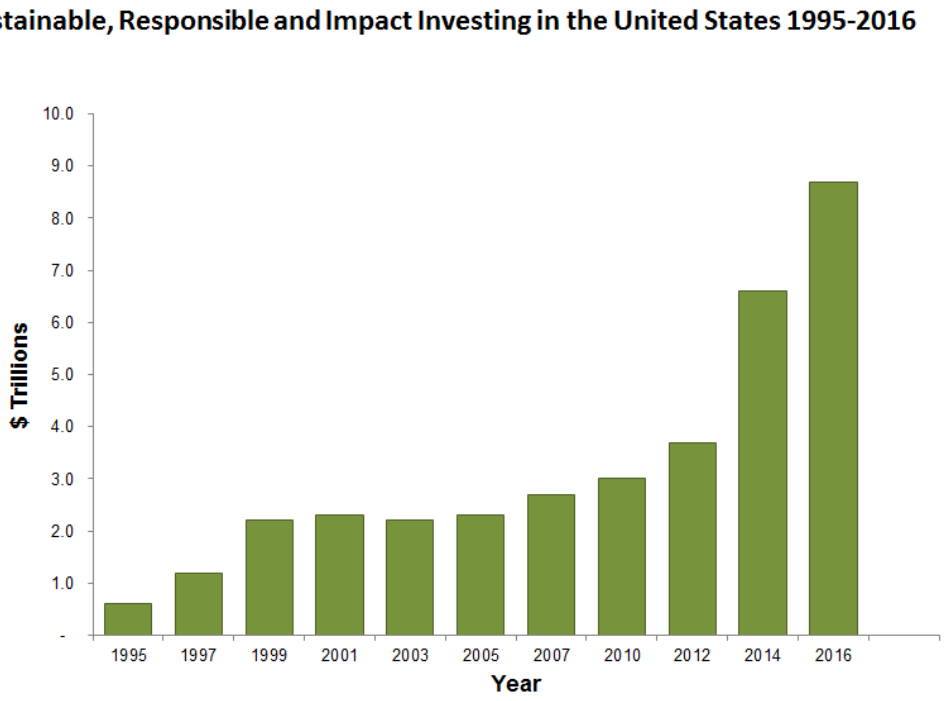
Sustainability factors integrated into business may regard a seemingly limitless range of issues including: carbon emissions; labor rights; natural resource utility; executive oversight; animal welfare; defense weaponry; corporate culture; and social impact, among a host of others. The relevance of global stewardship in business practice varies by firm and industry, and is also tied to various government regulations. As countries adopt or reject standards for sustainable practices, businesses may adapt to meet those regulations in order to remain competitive.

With increased awareness on sustainable technologies and practices, market participants are becoming interested in investments that promote global stewardship while providing strong returns. There is rising demand from consumers, investors, and company executives for corporate alignment with sustainable interests.[1] The economic impact of interest in sustainable investing has been significant in the United States. The Forum for Sustainable and Responsible Investment reported a 33% increase in assets under management in sustainability aligned investment strategies from 2014 to 2016 and a 14-fold increase during the period 1995 to 2016.[2] These data demonstrate that sustainable investing is not a passing fad, but rather an integral component of global markets in the long run.

[1] See for example:
- The Demanding World of Sustainable Investing: https://www.morganstanley.com/ideas/sustainable-investing-asset-managers
- Doing Well By Doing Good: https://www.nielsen.com/content/dam/nielsenglobal/apac/docs/reports/2014/Nielsen-Global-Corporate-Social-Responsibility-Report-June-2014.pdf
- Investing for a Sustainable Future: https://sloanreview.mit.edu/projects/investing-for-a-sustainable-future

[2] 2016 US Sustainable, Responsible and Impact Investing Trends Report, US SIF Foundation: https://www.ussif.org/files/Trends/US%20SIF%202016%20Trends%20Overview.pdf

*Sustainable, Responsible and Impact Investing in the United States 1995–2016**



* Source: US SIF. The chart combines two SRI strategies measured by US SIF: ESG incorporation and shareholder resolution filings on ESG issues.

STEWARDSHIP MAY SIGNAL QUALITY AND LONGEVITY

As market participants become more interested in global stewardship, companies have opportunities to meet evolving demand in new ways. Firms that are adept at managing risks and seizing opportunities, including those presented by sustainability, may maintain competitive advantages in changing market climates.

Consider a firm that invests in manufacturing equipment to meet consumer demand. If the firm invests in new technology designed to decrease carbon emissions and increase operator safety, the firm can boost productivity while mitigating risks to the wellbeing of its employees and the environment. These stewardship efforts may also mitigate financial risks as sustainable technologies might be cost saving for the firm in the long run. Investing in sustainable technology may also help the firm avoid punitive financial damages that could be assessed through legal and regulatory fines resulting from potentially negligent business operations.

Beyond managing risks, global stewardship can create new opportunities for companies to maintain competitive advantages. For example, buildings that meet requirements for sustainable certifications can maintain significantly higher occupancy rates while receiving higher rent revenues than buildings without sustainable operations.[3] Sustainable buildings may include grand features to capture renewable energy, or smaller scale features that minimize energy use within the building. These efforts can improve the quality of building environments, attract tenants, and efficiently meet tenant demands over the long run.

[3] Kok, Nils and Devine, Avis, "Green Certification and Building Performance: Implications for Tangibles and Intangibles" (September 2015), *Journal of Portfolio Management.*

Sustainable stewardship also encompasses the core competencies of an organization. Company culture, employee engagement, executive oversight, Board independence, community investment, innovative intellectual capital, and alignment with stakeholders are examples of stewardship factors that can drive long-term success. Firms that foster organizational sustainability can attract and retain high quality talent, increase productivity, reinforce ethical and professional standards, and improve client satisfaction. In this way, the integration of stewardship efforts may signal a company's quality and capacity for longevity.

Sustainable technologies and practices may maximize operational efficiency, improve production, attract consumers and investors, and increase revenues. Global stewardship efforts can also decrease operational costs and consumer price sensitivities. Combined, these factors may significantly boost profits to stakeholders. When stewardship efforts impact a firm's financial success, they become material to stakeholders.

OBSTACLES IN EVALUATING THE FINANCIAL IMPACT OF SUSTAINABILITY

The impact of global stewardship efforts can have intangible value that may be difficult for investors to measure. International reporting mandates may or may not include compulsory non-financial disclosures pertaining to sustainable practices in business. Intangible assets are also qualitative and subjective in nature, so objective and quantitative data demonstrating their impact on a firm may be unavailable to investors. These obstacles are amplified by traditional accounting standards that have struggled to keep pace with market participants in valuing non-financial assets.[4]

In the absence of reports that standardize metrics for the value of sustainable intangibles, investors may turn to metrics of stewardship published by individual firms. In instances where firms do not proactively enact or report sustainable practices, investors may exercise ownership rights to encourage firms to do so. As responsible investors engage with firms to evaluate how corporate stewardship impacts firm quality, responsible firms should in turn reactto stakeholder demand by establishing or reiterating material stewardship and publishing metrics on its financial impact. This feedback loop can be an important way for investors to overcome reporting deficiencies to effectively value material sustainability. Likewise, it can be a powerful tool for quality firms to align themselves with stakeholders' interests for long-term success. [5]

As factors of global stewardship become ingrained in firm cultures, they may also become financially meaningful to stakeholders. Market participants should not ignore the value of sustainable practices that have material implications for the financial health of a firm and its stakeholders. Instead, market participants may benefit from viewing global stewardship as a tool for managing risk, identifying quality opportunities, and engaging with companies to understand impacts to financial sustainability.

[4] "SASB Conceptual Framework," Sustainability Accounting Standards Board, February 2017; "What's In a Name?" Sustainability Accounting Standards Board, April 2015.
[5] Werther, Jr., William B. and Chandler, David, *Strategic Corporate Social Responsibility: Stakeholders in a Global Environment*, Los Angeles, Sage Publications, 2006.

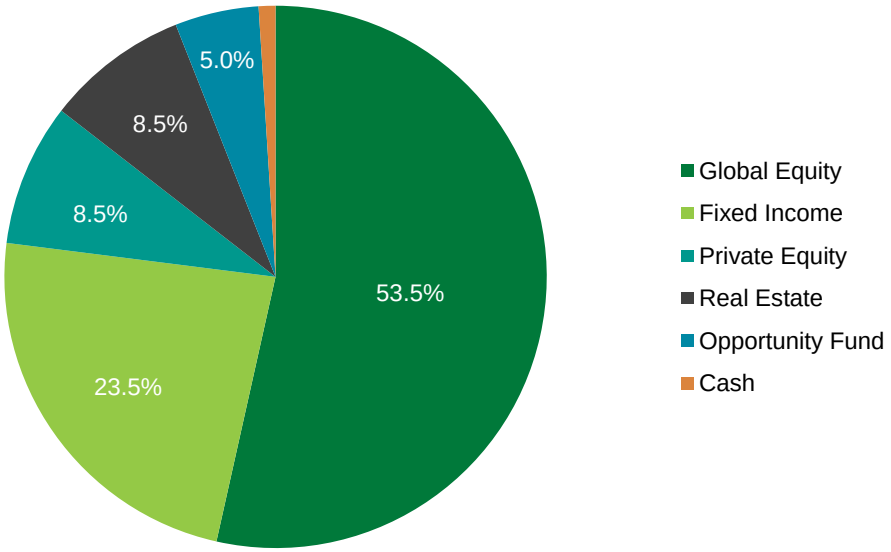
PERA's Investment Stewardship

PERA's approach to investment stewardship has always been to seek the best risk-adjusted returns to ensure the financial sustainability of the Fund and its beneficiaries. In this section we discuss PERA's portfolio allocation, corporate governance advocacy, and performance benchmarking in our investment stewardship. We also highlight the incorporation of social stewardship in our investments, including in two funds PERA has launched–the Colorado Mile High Fund, and the PERAdvantage SRI Fund.

BUILDING A PORTFOLIO WITH LONG-TERM SUSTAINABILITY

Meeting perpetual financial needs requires using PERA's breadth of resources to design a sustainable framework on which to build a long-term investment portfolio. In constructing the portfolio PERA has allocated assets across diverse public and private markets. We actively manage investments in public equity and debt instruments in both developed and emerging markets; residential and commercial real estate properties; private equity partnerships; and in opportunistic interests. Allocating assets to diverse strategies allows PERA to maintain a broad investment portfolio which is important for long-term success.

Target Asset Allocations



PERA's long-term investment horizon provides time to not only identify, but to understand and anticipate changing market forces and their far-reaching impacts. This is especially advantageous as technology changes the quality of, and rate at which, information is disseminated and priced by markets. As new data become available, PERA is poised to thoughtfully evaluate broad consequences of information without compromising long-term gains with short-sighted decisions. This long-term vision helps PERA manage excess volatility created in public markets by investors reacting to short-term signals.

By looking deep into the investment horizon for diverse opportunity sets, PERA can identify enduring companies that will contribute to thriving economies, while avoiding those that will be unable to compete in the long run. PERA believes companies with strategies built for longevity are high-quality firms that adapt their business models to meet stakeholder interests and provide strong risk-adjusted returns. Focusing on high-quality investments helps us to avoid the pitfalls of investing in companies that will rank in the bottom percentiles among their peers over time. In the long run, PERA's focus on high-quality companies can significantly boost performance of the total fund and contribute to its sustainability.

ADVOCACY FOR STRONG CORPORATE GOVERNANCE

Of all the aspects of sustainable stewardship, corporate governance has been PERA's most in-depth and impactful focus. As part of PERA's commitment to our members' best interests, we encourage strong corporate governance through active engagement with the companies and partnerships in which we invest. We believe companies with sustainable corporate governance practices will be more likely to provide sustainable financial returns to shareholders.

Ideally, company interests are aligned with investors' interests through sound corporate governance. However, the temptation for management to act in ways that benefit themselves over their investors is always present. If company management is not acting in the best interests of long-term shareholders, returns will suffer. Academic research has estimated corporate fraud costs the U.S. economy between $180 and $360 billion dollar a year.[6] This has a significant impact on shareholder value.

PERA's approach to advocacy against impediments to strong corporate governance is to actively engage with companies on a wide range of issues that may impact shareholder value. PERA aims to invest in partners with a history of strong corporate governance, and we monitor our partners on an ongoing basis to ensure they continue to act in the best interest of their investors. To that end, we hold meetings with corporate management, vote proxies, review external managers, analyze management track records, and hold positions as Board members of our investment partnerships.

PERA has a dedicated team of corporate governance staff which fulfills the corporate governance policies and procedures set forth by PERA's Board of Trustees and our Shareholder Responsibility Committee. The fulfillment of these policies is supplemented with insights from our investment staff, as well as third-party governance experts such as Glass Lewis, ISS, and MSCI. Our corporate governance staff also partners with other pension funds and asset managers to help develop and share best practices.

PERA's corporate governance philosophy is centered on three pillars:

> **Fair Markets–**We believe markets that treat participants in a fair and equitable manner are beneficial to all long-term investors.
>
> **Alignment–**We believe aligned interests of companies and investors are paramount to company success in the long run.
>
> **Disclosure–**We believe that as owners and creditors of a business, investors deserve robust and accurate information on financial and operational results.

[6] Dyck, I. J. Alexander and Morse, Adair and Zingales, Luigi; How Pervasive is Corporate Fraud? (February 22, 2013); Rotman School of Management Working Paper No. 2222608: https://ssrn.com/abstract=2222608 or http://dx.doi.org/10.2139/ssrn.2222608

Fair Market Advocacy

PERA believes that fair and equitable markets are in the best interest of our members. Given PERA's size and reputation, we can have a meaningful impact in creating markets that are designed for the benefit of investors. PERA's staff and Board members make tremendous efforts to advocate for all investors. Our advocacy for fair markets includes engaging with global regulatory bodies, supporting investor-friendly legislation, and participating in advisory groups.

In our efforts to help improve global capital markets for investors, our staff and Board members provide their expertise to various regulatory Boards and capital market organizations. In 2017, PERA collaborated with our main advocacy group, the Council of Institutional Investors (CII), to create and co-sign several letters regarding shareholder rights. CII is a nonprofit, nonpartisan association of pension funds, employee benefit funds, endowments, and foundations, with combined assets that exceed $3.5 trillion. In 2017, PERA's former Executive Director, Greg Smith served as the Co-Chair of CII's Board of Directors, and in 2018 Ron Baker, PERA's interim Executive Director, was elected to CII's Board of Directors.

PERA's investment professionals are also members of the following advocacy leadership groups:

Organization	Group	Focus
Securities & Exchange Commission (SEC)	Fixed Income Market Structure Advisory Committee	Fixed Income Markets
Public Company Accounting Oversight Board (PCAOB)	Investor Advisory Group	Auditor Regulation
Harvard Institutional Investor Forum	Advisory Council	Institutional Investors
Sustainable Accounting Standards Board (SASB)	Transportation Sector Working Group	Sustainable Disclosure
United Kingdom's Financial Reporting Council (FRC)	Performance Metrics Working Group	Financial Regulation
Financial Standard's Accounting Board (FASB)	Disaggregation Working Group	Accounting Standards
Council of Institutional Investor (CII)	Engaged Shareholder Group	Investor Engagement
Foreign Exchange Professionals Association (FXPA)	Board of Directors	Foreign Exchange

Dual Class Shares

One issue we address through our advocacy for fair markets is the issue of dual class shares. Over the last several years, there has been a trend towards some companies issuing shares with subordinate shareholder voting rights. PERA believes that shareholders should have voting rights that equal their economic interest. PERA has engaged with both individual companies and index providers to encourage fair representation to all shareholders.

Alignment Advocacy

The ability of owners to have a say in the direction of their investments is a key cornerstone of our economic system, and a responsibility PERA takes seriously. One of the most significant ways for shareholders to exercise their voice is through shareholder voting. We believe responsible companies with sustainable corporate governance capacity will use shareholder voting to inform the decisions of their Board toward alignment with shareholders.

Proxy Voting

In 2017 PERA staff voted proxies for 5,838 companies and 63,870 individual proposals.

PERA's Proxy Voting Summary

63,870	Proposals voted on company ballots (62,819 management proposals and 1,051 shareholder proposals)
5,838	Company meetings voted (1,849 U.S. companies and 3,989 non-U.S. companies)
4,335	Votes cast against the election of directors (13.7%)
722	Votes cast against audit/financial management proposals
258	Votes cast against the management advisory votes on executive compensation (14.9%)
232	Proposals for shareholder governance supported
244	Proposals voted on mergers and acquisitions, with 93.9% support for management's position on the M&A
80.1%	Votes cast in support of management proposals
114	Proposals voted on environmental issues, with 34.2% support in 2017 (compared to 35.7% in 2016 and 13.7% in 2015)

Board Accountability

The issues we address most often concerning the alignment of shareholder interests with those of a company's management relate to governing Boards. The following are examples of these issues and our approach to addressing them through proxy voting and interpersonal engagement.

- **Proxy Access–**Standing members of a company's Board of Directors typically select candidates for open Board seats and provide the list of candidates to investors on a proxy ballot card prior to annual shareholder meetings. PERA believes long-term shareholders should have proxy access (the ability to place alternative, independent candidates on the proxy ballot card). We are proponents of proxy access as a tool for long-term shareholders to dissuade Boards from perpetuating misalignment with shareholder interests. PERA has engaged management teams on this issue, and has voted for many shareholder proposals that would add proxy access to a firm's by-laws.

- **Majority Voting–**Many corporations have plurality standards for their Board elections, which allow Board nominees with the most voting power to be elected to Board seats, regardless of investor votes. In an uncontested Board election, a plurality standard would allow a nominee to be seated on the Board of Directors, even if there were more investor votes against their designation than votes for their designation. PERA supports majority voting policies that require a Board nominee to receive more "For" votes than "Against" votes from investors. PERA has a policy to vote for all majority voting proposals, and we actively encourage management teams to adopt these proposals.

- **Independent Chair–**In the United States it is common practice to have the CEO of a corporation also serve as the Chair of the Board. PERA believes this practice can lead to poor oversight, as it puts a CEO in the position of regulating his or her own performance. In order to overcome this lack of independent oversight, PERA has encouraged firms to either separate the chairman and CEO role or appoint a lead independent director. A lead independent director is a Board member that serves as the leading voice of the other independent directors and has many of the same authorities as the Chair of the Board, which

can help improve the oversight of a CEO that is also the Chair. PERA has voted for numerous proxies that require the appointment of a lead independent director and has directly encouraged firms to appoint a lead independent director.

- **Declassified Boards–**Classified Boards elect their Board of Directors every few years, and these elections are often staggered so that only a few seats are up for election every year. PERA supports declassified Board structures that require members of governing Boards to re-run for election every year. This structure allows investors to quickly remove members of the Board that are not fulfilling their fiduciary responsibilities. PERA votes for proxies that declassify Boards, and we engage with the companies in which we invest on an ongoing basis to advocate for their declassification if applicable.

In total, PERA voted against 13.7% of nominees to Boards of Directors in 2017. When considering director elections, PERA evaluates the independence and qualification of directors, the Board structure, and the company performance. As policy, PERA will vote "Against" or "Withhold" on director nominees who:

- Have attended less than 75.0% of Board meetings and committee meetings
- Sit on an excessive number of Boards
- Fail to maintain a majority independent Board
- Show lack of Board responsiveness to shareholders
- Have poor overall performance
- Present misaligned or excessive compensation issues
- Present audit issues

PERA's Director Election Voting Record

	Total Proposals Voted	For Votes	Against Votes	Abstain	Take No Action, Unvoted or Mixed
2015	29,894	25,406 (84.7%)	3,521 (11.8%)	182 (0.6%)	785 (2.6%)
2016	29,699	24,954 (84.0%)	3,793 (12.8%)	135 (0.5%)	817 (2.8%)
2017	31,608	26,223 (83.0%)	4,335 (13.7%)	189 (0.6%)	861 (2.7%)

Disclosure Advocacy

As PERA continues to advocate for strong corporate governance, we recognize the importance of solid disclosures for investors to adequately assess the overall performance of their investments. PERA has consistently advocated for transparent and accurate disclosures regarding companies' financial statements and operations.

Sustainability Disclosure

With increasing awareness of the risks associated with climate change, social stewardship, and related regulations, PERA has adopted parameters for voting proxies pertaining to disclosure of sustainability metrics. PERA will generally support proposals requesting increased disclosure on how companies are planning to mitigate the risks associated with climate change and related regulations. Over the past two years, PERA has voted for 65 shareholder proposals requesting increased disclosure of risks surrounding environmental sustainability.

PERA's Environmental Sustainability Disclosure Voting Record

	Total Shareholder Proposals		Percentage of Votes For		Percentage of Votes Against/Abstain	
	2017	2016	2017	2016	2017	2016
Climate Change	19	17	89.0%	70.0%	11.0%	30.0%
Greenhouse Gas Emission	8	10	12.0%	40.0%	88.0%	60.0%
Sustainability Reports	20	24	60.0%	79.0%	40.0%	21.0%

Beyond voting proxies regarding sustainable practice disclosure, PERA is also actively engaged in setting standards for efficient disclosure. Because there are obstacles in quantifiably measuring sustainable business practices, there are also obstacles in standardizing reporting of these practices. In addressing these obstacles, PERA has been a long-standing participant in the Sustainable Accounting Standards Board (SASB). This Board is actively developing a set of standardized metrics to help investors analyze a firm's ability to operate in a sustainable fashion. PERA staff participates in SASB's mission through working groups to discuss, evaluate, and propose sustainable accounting standards. PERA also encourages our investment companies to adopt the SASB reporting structure. We believe that standardized reporting metrics will go a long way in helping investors weigh the financial impacts of global stewardship in business.

SUSTAINABLE INVESTMENT BENCHMARKING

As PERA continues to examine the ways in which environmental, social, and governance stewardship can have financial impact, we have begun evaluating the impact of these stewardship efforts on our own portfolios. In this process we recognize one of the biggest challenges to conducting a sustainable investment strategy is the lack of relevant company-level performance data available to investors. As market participants grow more eager for data to evaluate the financial impact of global stewardship, there is a growing need for data vendors to provide sustainability metrics for investor consideration.

PERA has engaged with MSCI, an independent data provider, to objectively evaluate the environmental, social, and governance sustainability profile of our public equity investments. MSCI conducts detailed research on over 6,000 companies and scores them based on their sustainability risks, and their effectiveness in managing those risks. MSCI takes the sustainability scores of investments we hold in our portfolios, weights the scores based on the size of the position of those investments in our funds, and then compares the weighted scores of our portfolios to their respective benchmarks.

On completion of this analysis, our investment managers receive reports showing overall portfolio sustainability scores, benchmark scores, and score trends. The reports also demonstrate sub-categories of risk exposure based on sustainability factors such as carbon emissions and corporate governance risks. These comparisons help us evaluate whether our investments contribute to portfolios that are more sustainable than the broad market opportunities we are seeking to capture.

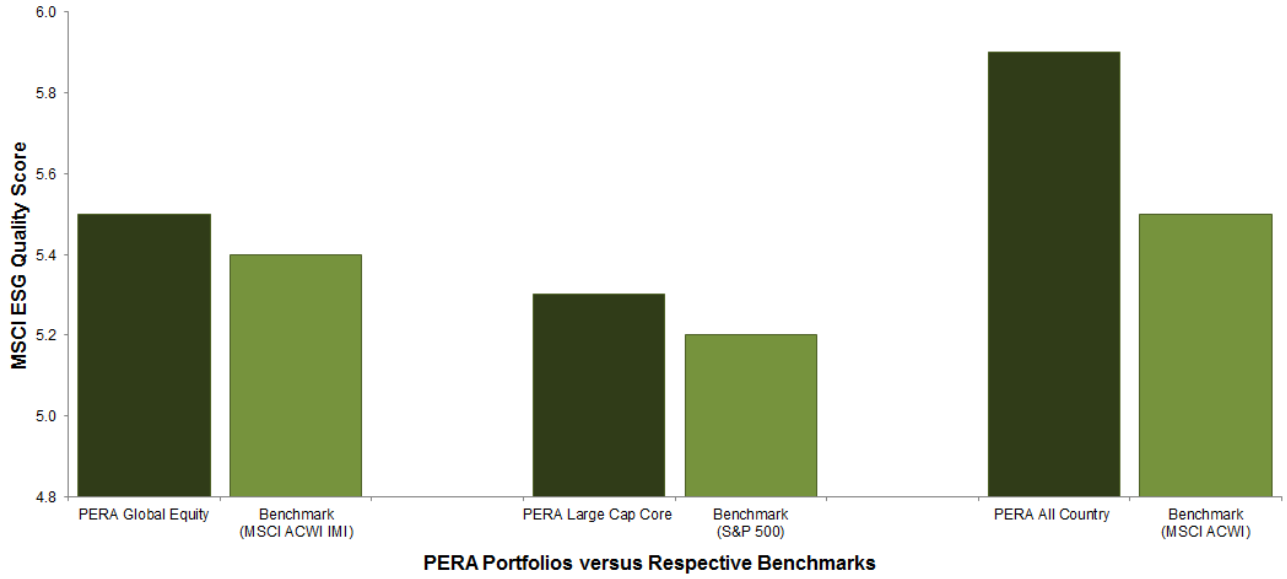
In the following exhibits, we provide some of the benchmarking results for PERA's total Global Equity portfolio along with two of our largest actively managed internal public equity portfolios: PERA Large Cap Core (representing large-cap equities at ~$5.2B) and PERA All Country (representing global equities at ~$2.9B).

MSCI Environmental, Social, and Governance (ESG) Quality Scores

MSCI's analysts research companies and designate ESG Quality scores based on each company's risks of industry-specific sustainability issues, and their ability to manage these risks. The ratings are based on quantitative as well as subjective analyses. ESG Quality scores range from 0-10, with a higher ESG score implying a higher measure of ESG Quality.

The chart below represents the overall ESG Quality scores of PERA's total Global Equity portfolio, Large Cap Core portfolio, and All Country portfolio, with each compared to its respective benchmark's ESG Quality scores.

MSCI ESG Quality Scores* of PERA's Portfolios vs. Benchmarks
As of January 31, 2018



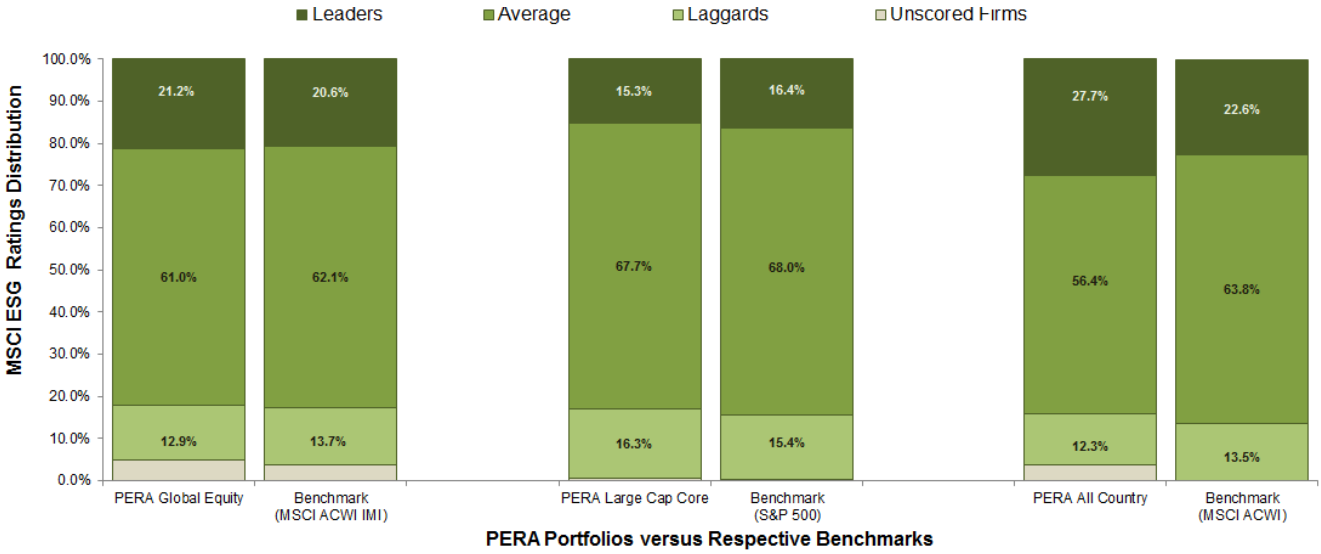
* MSCI ESG Quality scores range from 0-10.

MSCI ESG Quality Score Distribution

Portfolio level ESG Quality scores are a helpful tool for evaluating the overall sustainability profile of our investments, but we must also understand what factors are driving these scores. By examining ESG Quality score distributions, we can come to a better understanding of drivers for our overall sustainability profile. The score distributions show firms categorized as laggards (low ESG Quality scores), leaders (high ESG Quality scores), or average in terms of their individual sustainability profiles. These score distributions allow us to identify where we have the greatest risk and reward opportunities through firms practicing global stewardship within our portfolios.

The chart below illustrates the mix of ESG Quality leaders and laggards for PERA's total Global Equity, Large Cap Core, and All Country portfolios. These are each compared to the ESG Quality score distributions of their respective benchmarks.

MSCI ESG Quality Score Distribution
As of January 31, 2018

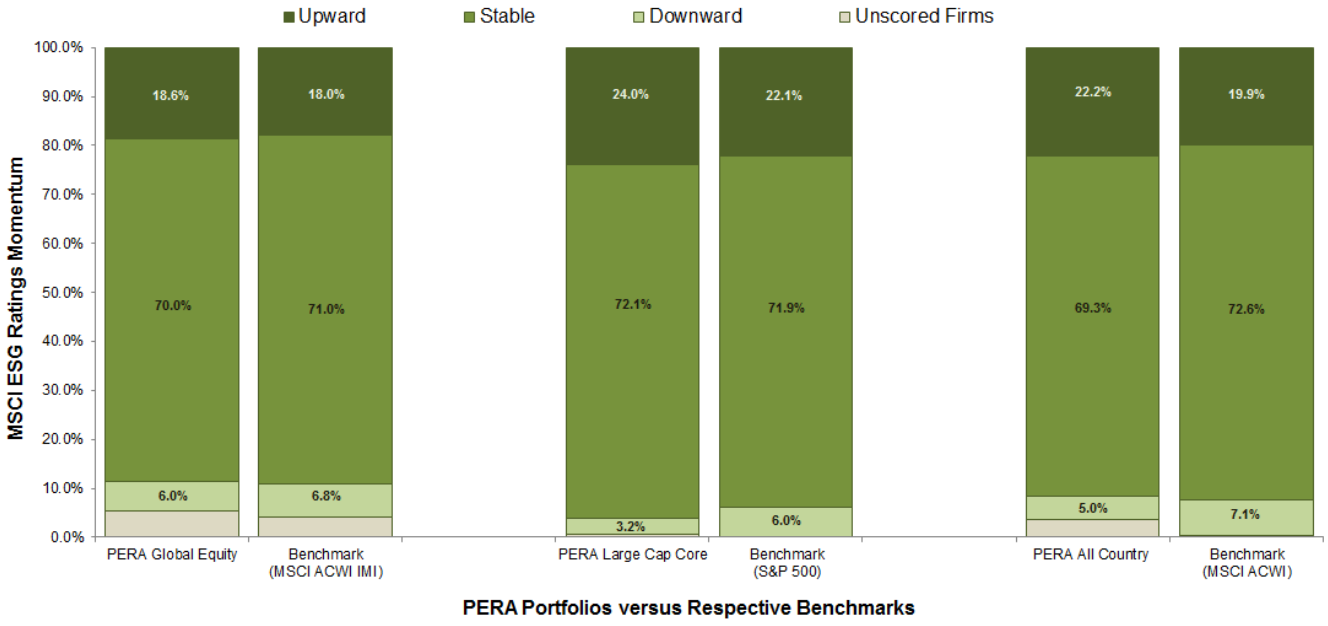


MSCI ESG Quality Momentum

Sustainability is a dynamic and fluid mosaic of factors for investors to continuously monitor. MSCI's ESG Quality Momentum ratings demonstrate the improving or degrading sustainability profiles of the companies in which we invest. By evaluating ESG quality movement, we can further analyze the risks and opportunities of firms as they continue to practice global stewardship in dynamic markets.

The following chart compares the MSCI ESG Quality Momentum ratings of our total Global Equity, Large Cap Core, and All Country portfolios to the Momentum ratings of their respective benchmarks. These results show that PERA's portfolios have more invested in companies with improving ESG scores, and less invested in companies with declining ESG scores, as compared to their respective benchmarks.

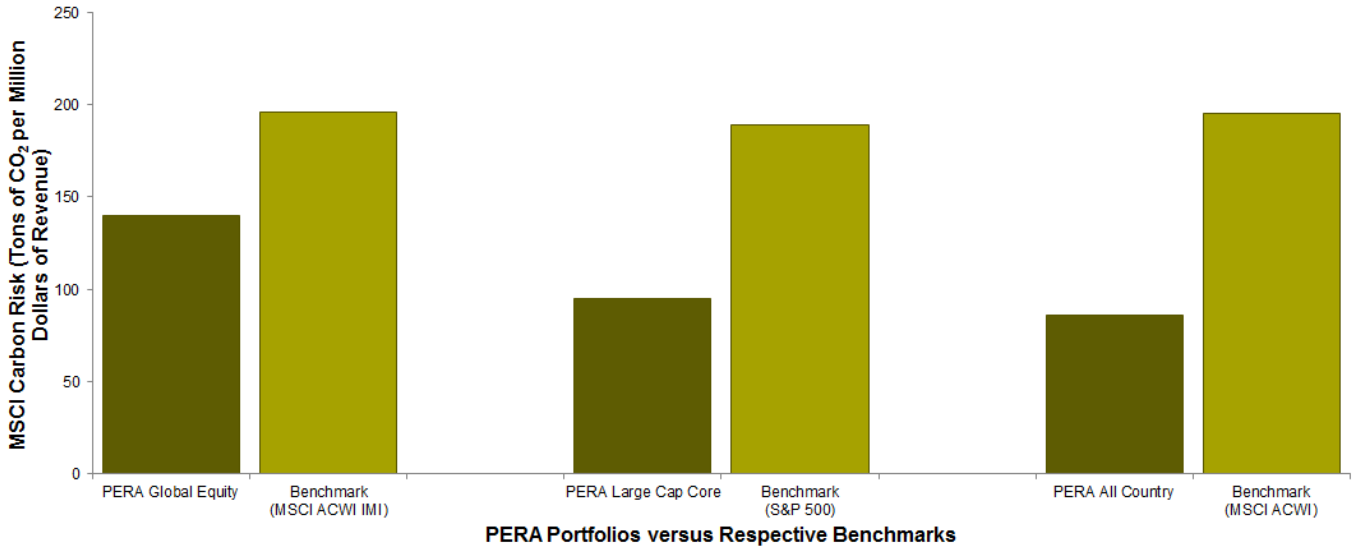
MSCI ESG Quality Momentum
As of January 31, 2018



MSCI Carbon Risk Assessment

MSCI also provides PERA an assessment of our portfolios' carbon risk by measuring our investments based on their carbon dioxide (CO_2) emissions relative to their total sales. As shown in the chart below, PERA's total Global Equity, Large Cap Core, and the All Country portfolios have between 28.0% and 56.0% less carbon emissions relative to their sales, versus their respective benchmarks.

MSCI Carbon Risk Assessment
As of January 31, 2018

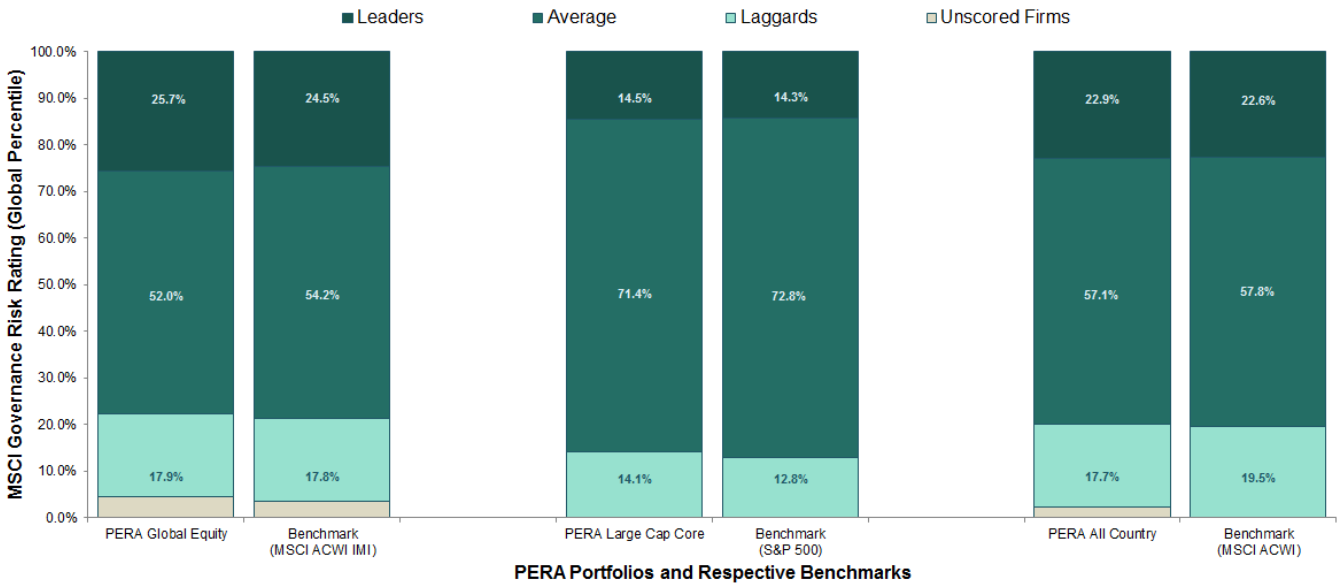


MSCI Corporate Governance Risk Ratings

Evaluating the quality of corporate governance is a complex and detailed process. MSCI's Governance Risk ratings give us a top-down view of our portfolios' performance on corporate governance. MSCI also provides supplemental insights on firms they have identified to have particular strengths or weaknesses in their corporate governance.

As shown in the chart below, PERA's total Global Equity, Large Cap Core, and All Country portfolios have investments in companies demonstrating exceptional corporate governance.

MSCI Corporate Governance Rating Distribution
As of January 31, 2018



The research, ratings, and analysis provided by MSCI are valuable tools for PERA in monitoring the environmental, social, and corporate sustainability profiles of our portfolios. By comparing the sustainability scores of our investments, the distribution and momentum of sustainable quality, as well as particular ESG factors of our portfolios and their benchmarks, we can begin to identify where the greatest risks and opportunities lie within our overall investment sustainability profile.

INVESTMENTS IN SOCIAL STEWARDSHIP

As steward of Colorado's largest pension plan, PERA takes pride in our contributions to Colorado's economy. We have introduced funds specifically dedicated to stewardship and local community investment. In 2007 we launched the PERAdvantage SRI Fund through our defined contribution plan, and in 2012 we partnered to create the Colorado Mile High Fund.

PERAdvantage SRI (Socially Responsible Investing) Fund (DC Plan)

In pace with growing economic interest in global stewardship, PERA launched its first fund dedicated to socially responsible investing (SRI) in 2007. The PERAdvantage SRI Fund is an investment vehicle through our defined contribution plan. As a retirement tool for our members, the fund is designed for long-term performance through investments in financially sustainable companies that also demonstrate quality global stewardship.

With financial sustainability as the primary focus, the fund targets a 40.0% allocation to fixed income, and a 60.0% allocation to equities.[7] Each allocation is invested in index funds. The fixed income portion is invested in the J.P. Morgan Government Bond Fund, and is comprised of U.S. Government and U.S. agency mortgage-backed securities. The equity portion is invested in the Northern Global Sustainability Index, and consists of developed market stocks screened on environmental, social, and governance factors.

To help investors measure the sustainability factor contributions to the PERAdvantage SRI Fund, its equity index fund investment (Northern Global Sustainability Index) has a sustainability profile rated by Morningstar. The Morningstar Sustainability Rating is a measure of how well the companies held by a fund are managing their environmental, social and governance risks and opportunities compared to similar funds.[8] As of December 31, 2017, Morningstar ranked the Northern Global Sustainability Index in the top decile of funds in its asset category, with a High Sustainability Rating.[9]

The Colorado Mile High Fund

In October 2012, PERA introduced the Colorado Mile High Fund, an investment vehicle that makes millions of dollars available for qualifying opportunities within Colorado's business community. The creation of the Colorado Mile High Fund earmarks capital for businesses that have a nexus to Colorado. The primary focus of this fund is private equity and venture capital opportunities structured as co-investments with financial sponsors. The fund may also consider uniquely structured capital formation opportunities from private equity and venture capital firms targeting Colorado-based opportunities. PERA uses an outside manager to assist with the management of this fund, and adheres to the same stringent investment and underwriting criteria for this fund as it uses in its overall private equity program.

PERA and its adviser have reviewed more than 70 investment opportunities resulting from an active deal sourcing effort that has included discussions with scores of representatives from prospective investment opportunities. At the end of 2017, the Colorado Mile High Fund had committed approximately 59 percent of the fund's total capital to six co-investments. Three co-investments

[7] https://copera401k.voya.com/static/epweb/pdf/ffs/CO60.PDF
[8] http://www.morningstar.com/articles/745467/morningstar-sustainability-rating.html
[9] http://www.morningstar.com/funds/XNAS/NSRIX/quote.html

have performed very well and were sold, generating gains in the portfolio. The three remaining co-investments are in the health care, industrial, and consumer discretionary sectors.

As part of its community outreach through the Colorado Mile High Fund, PERA has participated in events such as The Mountain Life Science Investor & Partnering Conference, Rocky Mountain Private Fund Advisers Summit, Boulder Business After Hours, Boulder Chamber's Esprit Event, the Silicon Flatirons Fall Private Equity Conference, and the Rocky Mountain Corporate Growth Conference.

Colorado Investing

PERA values the opportunity to invest directly in Colorado companies. We have more than $500 million in Colorado investments. These investments include:

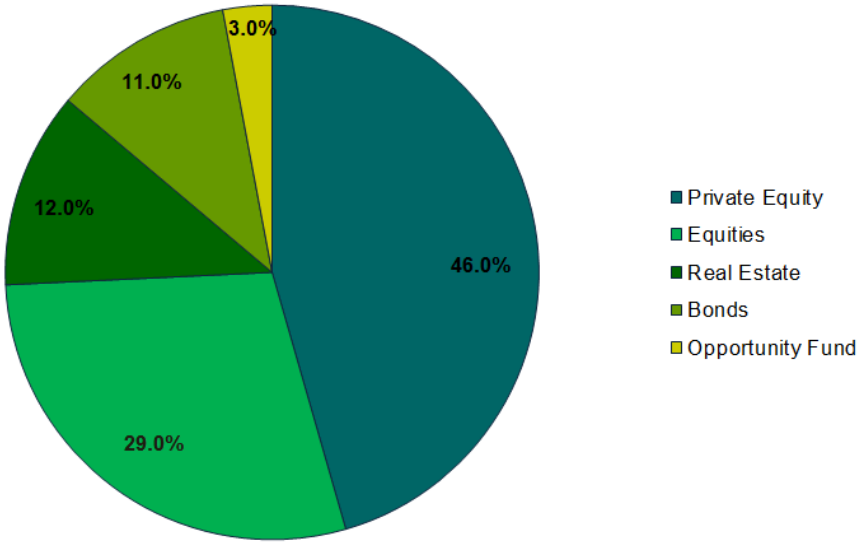
- Equity (both public and private) of companies headquartered in Colorado
- Bonds issued by the Colorado Housing and Finance Authority and by Colorado companies
- Real estate investments (both direct ownership and pooled investment capital)

All investments must meet the rigorous investment criteria for inclusion in the PERA portfolio.

Investments in Colorado
As of December 31, 2017

Asset Class	Fair Value	
Equities	**$**	**147,940,000**
Bonds	**$**	**55,391,000**
Bonds	$	48,758,000
Colorado Housing Finance Authority	$	6,633,000
Real Estate	**$**	**60,272,000**
Private Equity	**$**	**235,563,000**
Colorado Managers	$	166,172,000
Committed to Future Funding	$	69,391,000
Opportunity Fund	**$**	**16,032,000**
Total Investments in Colorado	**$**	**515,198,000**

Diversification of Investments in Colorado



In addition to our funds dedicated to responsible companies and our Colorado investments, PERA has also found meaningful financial opportunities in social stewardship through our participation in Colorado's economy. PERA saves over $35 million per year by managing the majority of our assets internally with the expertise of local staff, who in turn contribute to Colorado's economy. PERA engages with all our stakeholders – from state legislature, to the members we serve, and the employees who help us do so – on an ongoing basis because we know that our success relies on the success of our stakeholders.

STEWARDSHIP FOR A SUSTAINABLE FINANCIAL FUTURE

PERA believes the path of stewardship is actively created, rather than achieved. As sustainable technologies evolve, they shape the way market participants develop sound business practice, and in turn these practices inform new technologies. Evolving technologies and practices raise awareness of the impact of stewardship on the environment, society, and the economy.

With that awareness financial and regulatory boards may continue to develop standards that integrate the intangible values of stewardship, while holding firms accountable to their role in natural resource management and social wellness. That accountability translates into transparency and publicly available information. In turn, these yield knowledgeable investors, stronger competition, healthier markets, and profitable stakeholder gains.

As conversations around global stewardship evolve, PERA continues to focus on our investment stewardship. In fulfilling our fiduciary duty to our members, we remain committed to seeking the best risk-adjusted returns in diverse asset classes for long-term financial sustainability. We continue to weigh the risks and opportunities for reward presented by global stewardship. We remain vigilant in first-hand engagement with our investment partners to advocate for higher governance standards that may lead to stronger returns. In so doing we uphold financial sustainability as our top priority in our investment stewardship. Financial sustainability of the Fund will ultimately ensure the retirement success of all our members.

Disclosures

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