CALSTRS INVESTMENTS

Net Zero Portfolio Emissions Pledge Progress Report

January 2025

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Introduction

The California State Teachers' Retirement System believes climate change presents one of the greatest threats to our future and poses a serious risk to the CalSTRS Investment Portfolio and our ability to secure the financial future of California's public educators. While climate change presents material risks to all industries and asset classes, it also presents opportunities to invest in solutions that maximize returns and help the global transition to a net zero emissions economy.

We've been managing climate-related risks and strategically investing in climate-oriented investments for more than 20 years. In September 2021, the Teachers' Retirement Board, which administers CalSTRS, **pledged to achieve net zero greenhouse gas emissions** across our portfolio by 2050 or sooner. The board's pledge acknowledges the importance of the climate challenges impacting the world and helps ensure our portfolio remains resilient and sustainable.

This report highlights our actions to decarbonize our portfolio to meet our goals of minimizing risk and maximizing returns to ensure the financial future of California's public educators. It also showcases how we assess climate-related risks and opportunities and track our progress toward achieving net zero portfolio emissions by 2050 or sooner.

Major CalSTRS milestones

2004
Began investing in climate solutions

2006
Established climate change stewardship program to influence companies and governments to build resilience

2015
Signed Paris Pledge for Action in support of the Paris Climate Agreement

2016
Created low-carbon index to reduce portfolio emissions

2018
Joined Climate Action 100+ to engage companies

2020
Adopted climate-related Investment Belief

2021
Pledged to achieve a net zero investment portfolio by 2050 or sooner

2023
Adopted low-carbon index-based emissions reduction strategies and increased investments in climate solutions

Net zero strategy

Our net zero strategy has three pillars that advance our pledge of achieving a net zero portfolio by 2050 or sooner. These pillars provide the structure to help minimize the risk of loss and to maximize the rate of return of the CalSTRS Investment Portfolio.

Pillar 1

Managing and reducing portfolio emissions

We implement risk-appropriate emissions reduction strategies. We also report portfolio emissions measurements regularly and use them to inform our investment decisions and our priorities for influencing companies and policy makers to accelerate the net zero transition.

Pillar 2

Using our influence to accelerate the global shift to a net zero emissions economy

Understanding there are elements of the pledge we can control, and elements we cannot control but can seek to influence, we engage with other financial market participants to accelerate the global economy's shift to net zero. For example, to achieve our own net zero goals, we need the companies in our portfolio to accelerate their emissions reduction efforts.

Pillar 3

Increasing investments in low-carbon solutions

We see opportunities to invest in assets that meet our investment return objectives and provide climate solutions, including producing renewable energy or constructing and managing buildings that meet the highest energy efficiency standards. Since 2004, we've been actively integrating climate-oriented solutions into our portfolio and have invested more than $37 billion.

Pillar 1

Managing and reducing portfolio emissions

CalSTRS has a strategic approach to measuring and reducing portfolio emissions. Our emphasis on public markets emissions measurement is driven by long-standing engagement efforts that encourage company disclosure on carbon emissions, which allows for reasonably accurate assessments using corporate carbon footprint models.

In 2021, we began measuring emissions in listed equity and fixed income corporate credit. This informed our current strategies employing low-carbon indexes to reduce emissions. We focus on measuring and managing scope 1 (direct emissions from owned or controlled sources) and scope 2 (fossil fuel-based energy use) emissions. Absolute emissions are used as the metric since normalized metrics may be influenced by market movements. Annual emissions measurement is conducted as of December 31, ensuring consistency and reliability in tracking progress toward our net zero goal.

Total public market emissions (in tons of CO_2e*)

	Total portfolio			Total benchmark		
CalSTRS business unit	2022 emissions	2021 emissions	Year-over-year change	2022 emissions	2021 emissions	Year-over-year change
Global Equity	7,063,758	7,331,658	–3.70%	6,640,571	7,206,697	–7.90%
Fixed Income	601,819	640,855	–6.09%	523,406	571,519	–8.42%
SISS	211,955	223,107	–5.00%	536,666	551,063	–2.60%

The table above shows the total emissions exposure for CalSTRS' public markets securities across three business units: Global Equity, Fixed Income and Sustainable Investment and Stewardship Strategies (SISS), excluding derivatives and sovereign debt, as of December 31, 2021, and December 31, 2022. The table also provides year-over-year changes in emissions for each unit and compares each unit's emissions to their respective benchmark's emissions.

Global Equity and SISS benchmark: MSCI ACWI IMI** | Fixed Income benchmark: BBG US Agg 95% / BBG US HY Cash Pay 2% cap 5%

*Carbon dioxide equivalent (CO_2e) is a metric used to express the total global warming potential of different greenhouse gases (methane, nitrous oxide, perfluorocarbon, sulfur hexafluoride, nitrogen trifluoride and hydrofluorocarbon) in terms of the amount of CO_2 that would have the same warming effect over a specific time period.

**The MSCI All Country World Index (ACWI) Investable Market Index (IMI) captures large, mid and small cap representation across developed markets and emerging markets countries. The index is comprehensive, covering approximately 99% of the global equity investment opportunity set. The MSCI ACWI IMI benchmark emissions do not represent the emissions of the listed equities universe. The benchmark is customized to represent an MSCI ACWI IMI Index portfolio with a total market value equal to that of the CalSTRS Investment Portfolio.

Global Equity

From 2021 to 2022, the portfolio had a 3.70% decrease in emissions while the benchmark experienced a 7.90% reduction in emissions. This smaller drop in emissions, versus the benchmark, resulted from higher exposure to materials and energy, which are higher carbon sectors. This emissions attribution does not reflect Global Equity's current integration of a low-carbon index into its portfolio, as that emissions reduction strategy was implemented after the December 31, 2022, emissions measurement date.

Fixed Income

From 2021 to 2022, the portfolio saw a 6.09% decrease in emissions versus a benchmark drop of 8.42%. This variance in emissions occurred despite Fixed Income reducing exposure to sectors such as energy and industry, as the portfolio still had an overweight exposure to these higher emissions sectors. However, like Global Equity, the Fixed Income emissions attribution does not reflect the implementation of a low-carbon optimization strategy that started after the emissions measurement date.

Sustainable Investment and Stewardship Strategies (SISS)

From 2021 to 2022, the portfolio saw emissions reductions of 5.00% versus a 2.60% reduction in the SISS Portfolio index emissions. This is expected as the SISS Portfolio seeks to partner with managers who actively integrate climate considerations into portfolio management.

Global Equity emissions reduction strategy

During the second half of 2023, Global Equity began implementing an emissions reductions strategy by transitioning 20% of total Public Equity Portfolio assets to the MSCI ACWI Low Carbon Target (LCT) Index. The LCT Index closely tracks its parent index, the MSCI ACWI, to minimize active risk while reducing carbon exposure by overweighting low-carbon companies and underweighting high carbon companies. Prior to implementing this strategy, Global Equity analyzed the impacts on portfolio risk, return and emissions, and the impacts on the CalSTRS funding plan and determined that phasing in a 20% allocation to the ACWI LCT Index would reduce portfolio emissions in a risk-controlled manner.

As of June 30, 2024, approximately $21.70 billion or 15.37% of total Public Equity assets were invested in this index. Historically, the LCT Index has approximately 65%–80% less emissions than the parent MSCI ACWI Index, and staff expects this allocation will significantly lower portfolio emissions in alignment with CalSTRS' net zero goals.

Fixed Income emissions reduction strategy

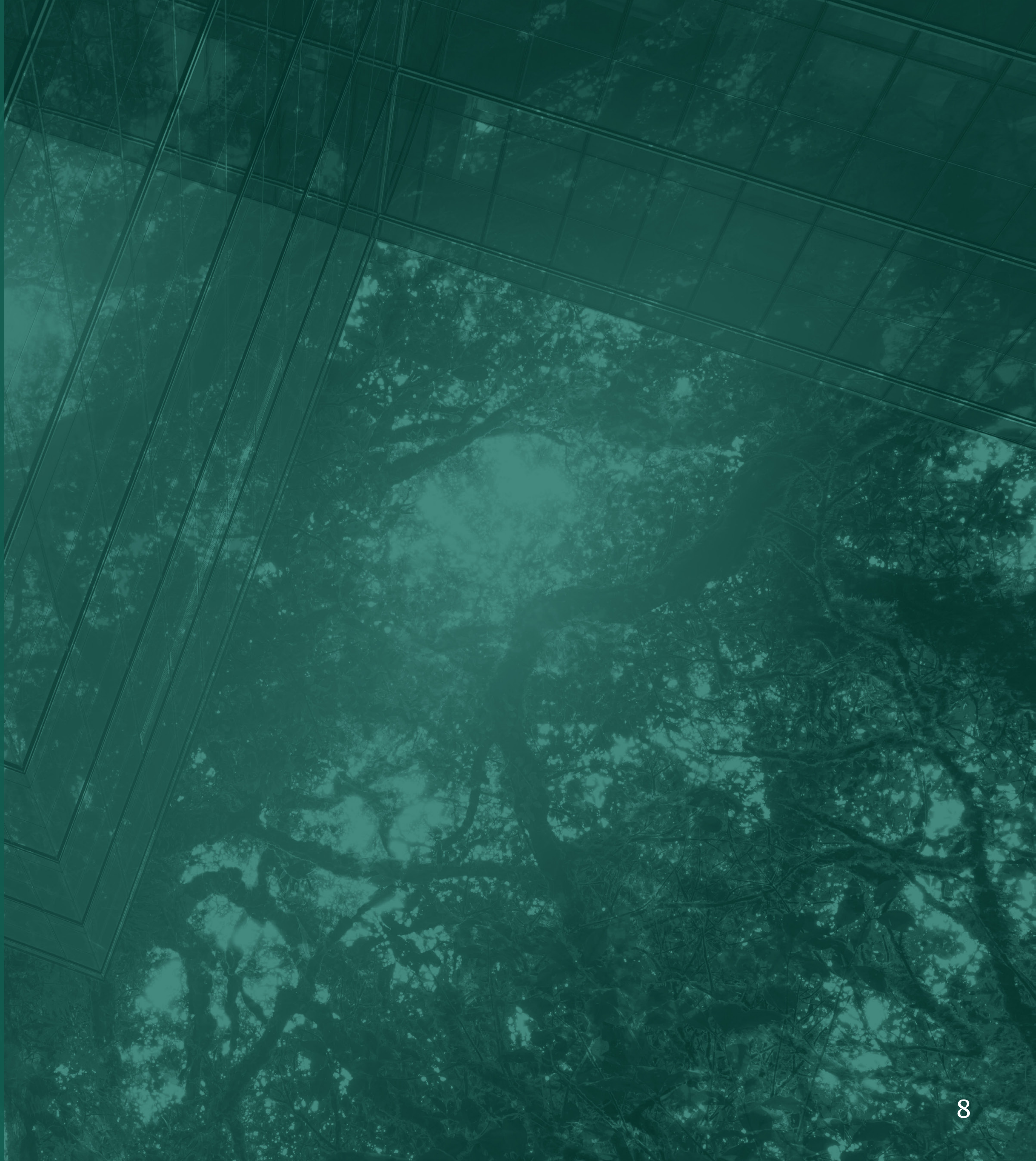
Fixed Income's carbon optimization strategy looks to lower the financed carbon emissions of the investable universe benchmark, at a measured pace, while keeping a tight tracking error to the parent benchmark. This strategy is in line with the portfolio's risk budget and its active enhanced indexing management strategy. Fixed Income successfully implemented this new carbon optimized strategy at the end of September 2023. The index optimization enabled the credit-related portfolios to reduce emissions by approximately 8% from October 1, 2023, to June 30, 2024.

Pillar 2

Using our influence to accelerate the global shift to a net zero emissions economy

CalSTRS recognizes meaningful progress toward our net zero goals will not happen unless the global financial markets also demonstrate meaningful progress toward integrating net zero considerations. For this reason, we use our influence as a large, thoughtful investor to promote an accelerated global net zero transition in three ways:

- **Engage portfolio companies** to minimize risk and promote value creation through shifting their business practices.
- **Support shareholder proposals and vote our proxies** to encourage companies to recognize and respond to the risks and opportunities associated with the net zero transition.
- **Advocate for public policy and regulations** that align the financial markets with the net zero transition and build resilience.



Stewardship priorities

The **CalSTRS Corporate Governance Principles** lay the foundation for our stewardship activities. These principles are based on best practices in the marketplace that support long-term value creation and mitigate risks to the portfolio. We continue to support market-wide corporate governance initiatives that will improve the investing landscape for shareholders and our beneficiaries.

The Teachers' Retirement Board reviews and approves the **CalSTRS Stewardship Priorities** to focus staff's activities on the most relevant issues for engagement that mitigate risk, support long-term value creation, and promote practices that provide for a sustainable financial market.

In January 2024, the board's Investment Committee approved the following Stewardship Priorities as a three-year plan for calendar years 2024, 2025 and 2026:

Corporate and market accountability

We seek to influence regulators, standard-setters and policymakers to promote sustainable markets, effective and diverse boards, and protect shareholder rights.

Workforce and communities

We are committed to influencing portfolio companies to ensure a healthy and engaged workforce and to be good stewards in the communities in which they operate.

Net zero transition

We engage companies to reduce emissions in the global economy with a focus on the highest carbon emitters within our portfolio and methane emissions mitigation.

We developed three engagement strategies in alignment with the Net Zero Transition Stewardship Priority that lower corporate emissions and mitigate climate risk.

Climate Action 100+

Climate Action 100+ is an investor-led initiative engaging the world's largest corporate greenhouse gas emitters to enhance climate risk governance, curb emissions and improve climate-related financial disclosures.

High emitters — Priority 45

Priority 45 is a subset of companies that account for approximately 7% of CalSTRS' global equity emissions and are not covered through Climate Action 100+. Staff actively engages the management teams and boards of these 45 companies on a variety of net zero-aligned best practices, including tying executive compensation to progress against their short and medium-term emissions reduction goals, and obtaining audit assurance for their reported emissions and their energy consumption.

Methane — OGMP 2.0

We engage portfolio companies to join the **Oil & Gas Methane Partnership 2.0**. OGMP 2.0 is a United Nations Environment Program initiative that requires member companies to measure their methane emissions (as opposed to estimating them) and to set emissions reduction targets. Since staff began engaging oil and gas companies on OGMP 2.0 at the beginning of 2023, 15 companies have joined, including Exxon Mobil Corporation and Chevron Corporation.

We are focused on this issue because:

- *Methane is potent* — Methane's **warming potential** is 80 times greater than carbon dioxide over the course of 20 years. Methane has also accounted for 30% of the rise in global temperatures since the Industrial Revolution.
- *Methane is underreported* — Analysis from the International Energy Agency indicates methane emissions are approximately **70% greater** than estimated worldwide.
- *Reduction is cost-effective* — The International Energy Agency estimates 30% of methane emissions from fossil fuel operations can be **abated** with no net cost.

Importance of sustainability-related disclosures

We've been a long-time advocate for more meaningful corporate disclosure. We support the **International Sustainability Standards Board's (ISSB)** standards, which fully incorporate the standards of the **Task Force on Climate-Related Financial Disclosures**. These standards aim to improve communication between companies and investors by providing globally comparable, decision-useful sustainability-related disclosures, including on climate risks.

The International Sustainability Standard Board's standards help to inform how sustainability issues impact the long-term performance of our fund and help investors understand the most important climate-related risks. CalSTRS' **Investment Policy for Mitigating Environmental, Social and Governance Risks** also guides our investment decisions as it calls for our partners and us to incorporate material environmental, social and governance considerations into investment analysis to protect the long-term success of an investment.

Proxy voting

As an active shareholder, we use our position as a long-term investor to influence and support companies as they shift their business practices to be resilient in a net zero emissions economy. During the 2024 proxy voting season, we voted against the boards of directors at 2,258 global companies because these companies did not provide sufficient disclosure to allow us to determine whether they were appropriately managing the risks and opportunities associated with climate change and the global transition to a net zero economy. We also supported shareholder-submitted proposals that aligned with our goals and requested that companies better manage climate risks or improve climate-related public disclosures.

Public policy and regulatory advocacy

We engage regulators and policy makers to support actions that provide for well-functioning and efficient markets that support long-term value creation. Consistency and transparency around climate-related risks and opportunities impacting companies are necessary to allow investors to make well-informed decisions. Despite its ongoing **legal challenges**, we continue to support the U.S. Securities and Exchange Commission's climate-related disclosure rule, which is a crucial step toward more reliable, consistent and comparable information to assess the risk and opportunities to portfolio companies.

External manager engagement

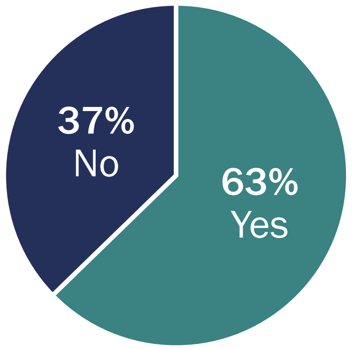
We recognize the importance of working with our investment partners to achieve our net zero pledge. Asset classes across the fund are engaging with their investment managers to understand how their capabilities align with CalSTRS' net zero goals. This involves comprehensive surveys and discussions to evaluate firms' net zero strategies, policies, affiliations, efforts to measure and reduce emissions, and research and analysis driving investment opportunities.

Private Equity

Private Equity staff engage their managers through a comprehensive survey that focuses on:

- **Overall firm-wide approach to addressing the net zero transition, including if there are dedicated resources to perform analysis.**
- **Investment strategy and activity around energy transition or decarbonization-related assets.**
- **Affiliation with any industry organizations involved with reporting standards for emissions measurement.**
- **Efforts to measure and/or reduce emissions (at the general partner level and at the portfolio company level) as well as disclosure to limited partners.**

General partner emissions measurement



Initial survey results showed that approximately 63% of the Private Equity Portfolio is actively measuring and reporting emissions on a portion of their portfolios or have plans in place to begin doing so. Staff believe that between 10% and 20% of total Private Equity net asset value is currently being measured.

Of the partners that do measure emissions, two-thirds (42% of respondents overall) track emissions data both at the firm level and for their underlying investments. For partners that do measure emissions, two-thirds (43% of respondents overall) track emissions across scopes 1, 2 and 3. Additionally, 45% of general partners have a dedicated team focused on evaluating environmental, social and governance risks and opportunities or net zero (or both in some instances), and 53% indicated they've engaged a consultant to support net zero efforts.

Inflation Sensitive

Inflation Sensitive staff use a detailed annual survey to track external manager progress in integrating net zero considerations into investment decision-making. Staff ask about the firm's strategies and policies, measurement and reporting practices, internal staffing and affiliations related to climate change and the energy transition.

Risk Mitigating Strategies

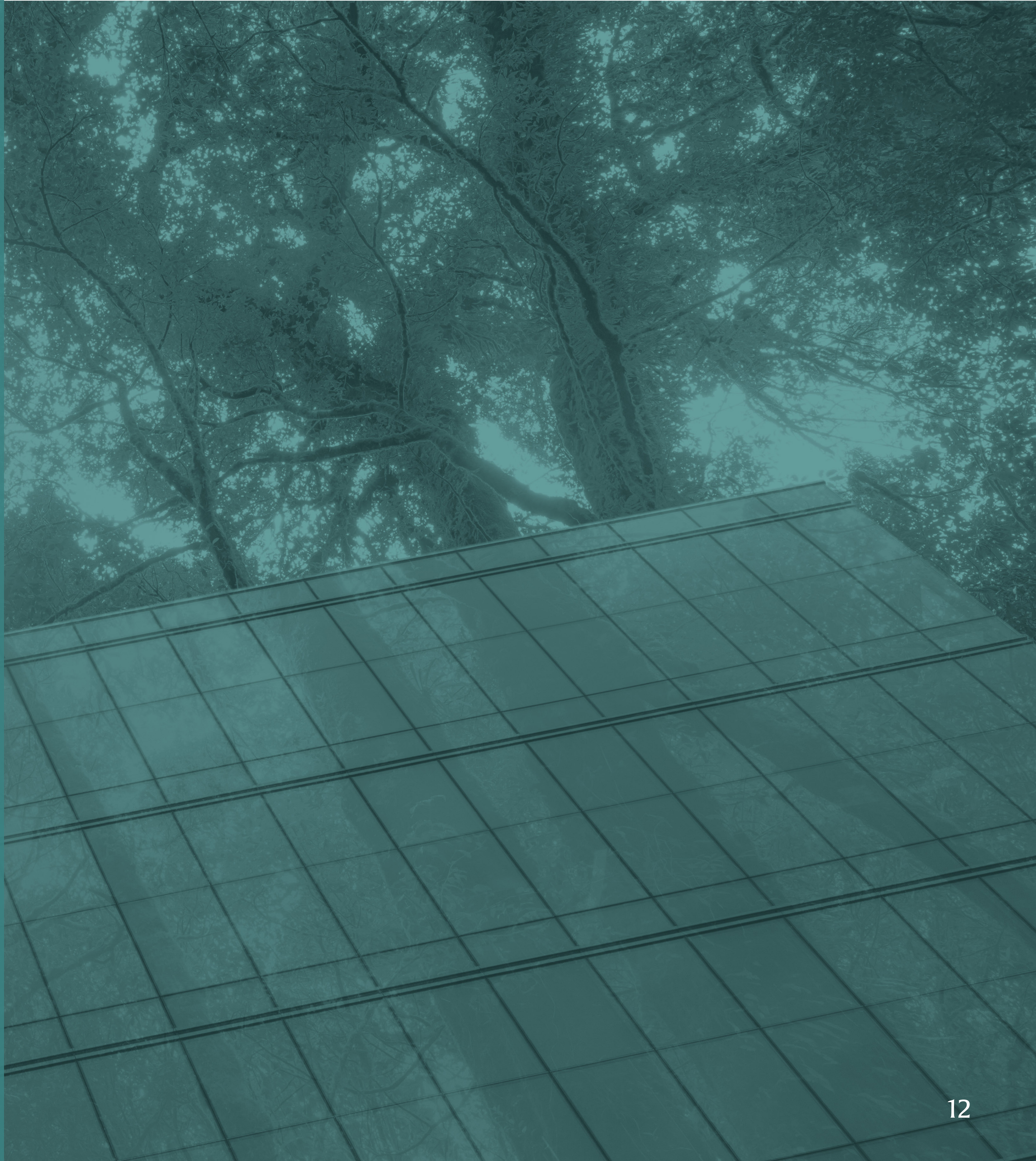
The Risk Mitigating Strategies Portfolio consists of 15 external managers who take both long and short positions in all major asset classes, use derivatives rather than individual corporate securities, and tend to be more dynamic in how long they hold positions. In some cases, positions from one week to the next may be different. Risk Mitigating Strategies surveyed a broad universe of global long-short managers to explore ways to reduce emissions in such a portfolio as a well-defined approach to measuring emissions in these types of portfolios has yet to be established. Initial reflections are that some managers are still early in incorporating net zero considerations, while others have hired climate scientists on staff to develop proprietary data to measure potential climate impacts on investments.

Pillar 3

Increasing investments in low-carbon solutions

CalSTRS has a long history of investing in strategies that align with the fund's belief that sustainable investing supports our fiduciary duty to maximize investment returns and manage financial risks in a changing world. Staff actively seek opportunities, particularly within the private markets (SISS, Private Equity, Inflation Sensitive and Real Estate) that are additive to our risk and return goals and provide climate solutions to the global economy.

We approach the due diligence of low-carbon investments with the same rigorous standards applied to all other investments. This involves a comprehensive assessment that includes evaluating financial performance, risk factors and alignment with long-term strategic goals. By integrating these criteria into the due diligence process, we ensure low-carbon investments meet the same high standards of quality, performance and risk management as any other investment in our portfolio.

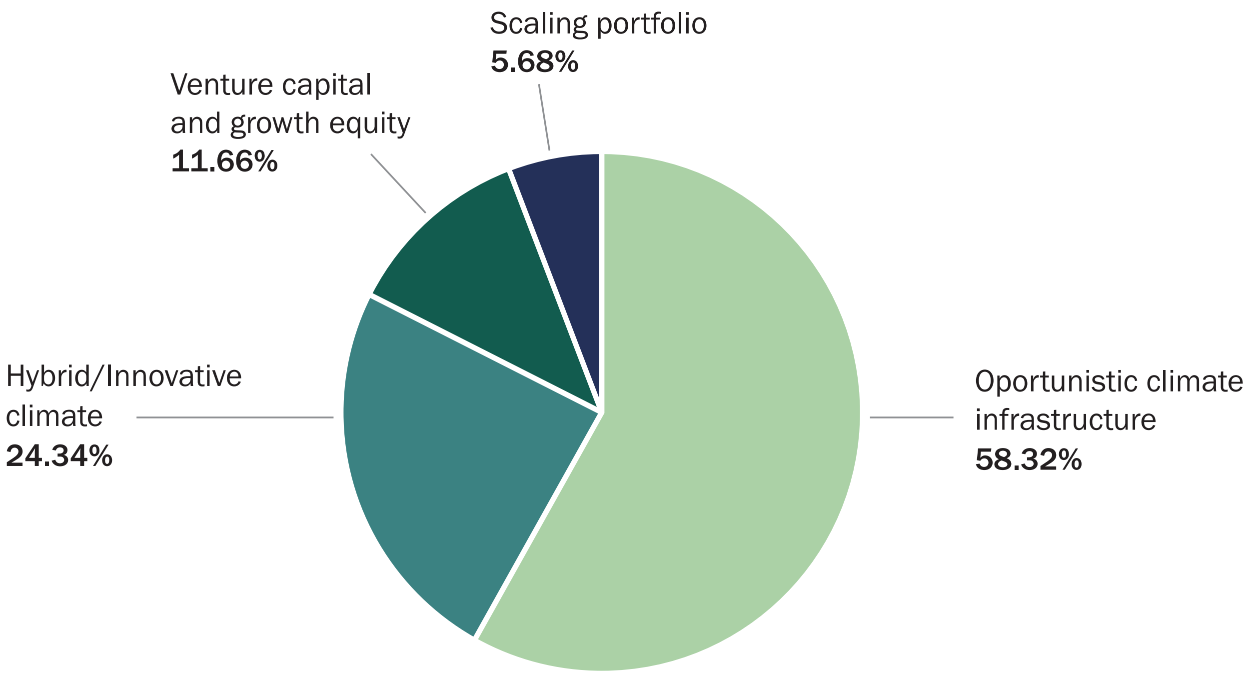


Sustainable Investment and Stewardship Strategies (SISS) Private Portfolio

The SISS Private Portfolio was approved by the Teachers' Retirement Board's Investment Committee in 2021 to provide a systematic platform to serve as a source of long-term capital appreciation and accelerate our exposure to low-carbon solutions that are additive to the total fund. The portfolio is structured to invest flexibly across four broad risk and return profiles to help us take advantage of new and emerging climate solutions across private markets.

As of June 30, 2024, the portfolio had committed nearly $2 billion with inaugural investments across each of the four broad risk and return profiles.

SISS Private Portfolio allocation



New opportunities portfolio

Explores new CalSTRS sustainability-focused partnerships that take advantage of unique alpha opportunities and opportunities that may not naturally fit in other asset classes:

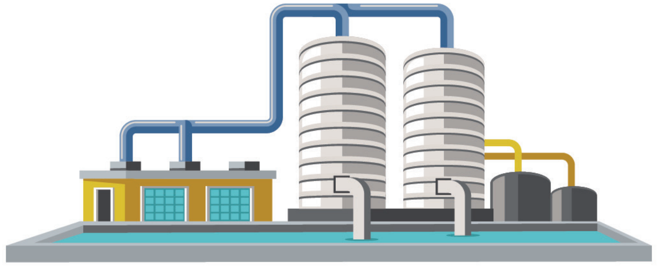
- Opportunistic climate infrastructure.
  - Sustainability-focused real asset investments with a primary focus on clean energy and decarbonization solution investments.
  - Sectors with existing commercial operating models where capital is required to scale solutions.
- Hybrid/Innovative climate solutions.
  - Unique structures and risk/return profiles that may not fit neatly into other asset classes.
  - Company investments and real assets that intentionally decarbonize heavy emitting sectors.
- Venture capital/Growth equity low-carbon solutions.
  - Early stage companies focused on technology-enabled low-carbon solutions not contingent on binary policy outcomes or subsidies.
  - Sectors with large emission profiles where end users seek cost-effective solutions to reduce emissions.

Scaling portfolio

Leverages existing CalSTRS partnerships with other asset classes to increase sustainability-focused co-investment and joint venture opportunities.

Case study 1 — Opportunistic climate infrastructure

An investment that established a strategic partnership with a sustainable infrastructure company that provides permanent capital (both debt and equity) to finance sustainable power generation, carbon-free mobility (such as school bus electrification), and water and waste facilities across the United States.

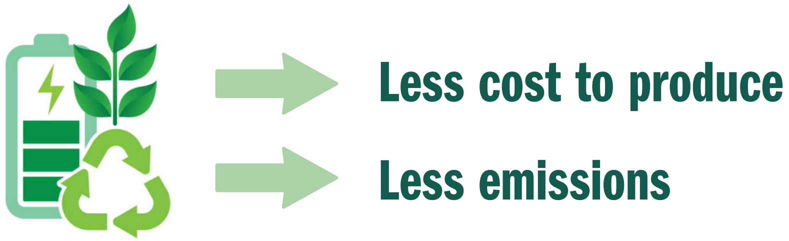


Case study 2 — Hybrid/Innovative climate special situations

An investment to establish a platform partnership focused on climate solutions that dramatically reduce or remove emissions through industrial climate solutions (such as a first-of-a-kind green steel plant to produce steel with hydrogen and 95% lower carbon intensity) and natural climate solutions that staff believe to be the newest frontier for climate-focused investors, such as regenerative agriculture practices, forest restoration and conservation, carbon measurement, and durable carbon removals.

Case study 3 — Venture capital and growth equity

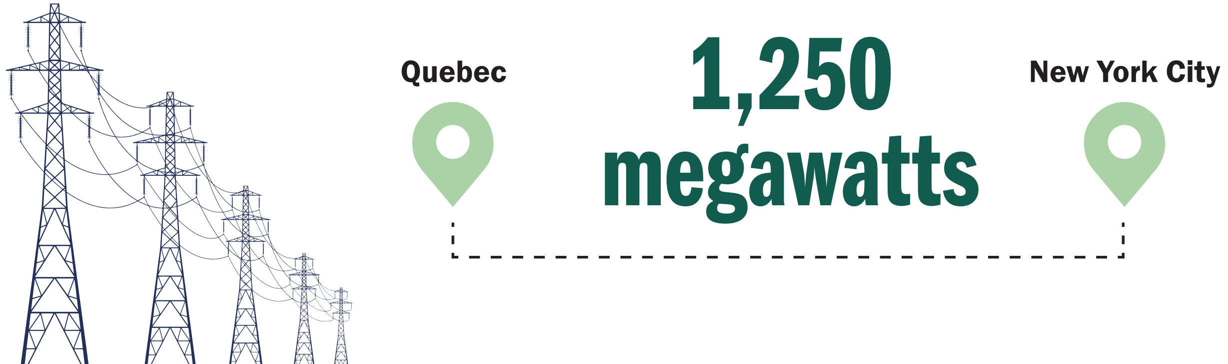
A commitment to a venture investment strategy focused on disruptive technology that significantly reduces emissions with superior unit economics versus current business solutions. For example, a battery recycling and manufacturing business where nearly all the materials are recycled, the battery costs one-third less to produce, and has the added benefit of significantly less emissions released throughout the manufacturing process.



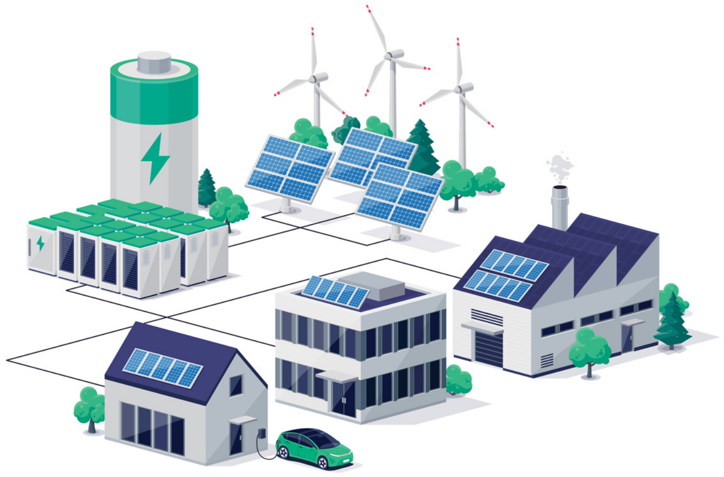
Case study 4 — Scaling portfolio: Focus on private equity

Private Equity currently has exposure to multiple energy transition/low-carbon investments within its portfolio (typically on an indirect basis and in some instances on both an indirect and direct basis, such as co-investments). In addition to exposure via Private Equity's investment partners, staff from the Private Equity and SISS teams have invested together to scale several co-investments focused on climate solutions.

Case study 4.A — A co-investment in a 339-mile transmission line that will deliver up to 1,250 megawatts of renewable power from Québec to New York City, representing approximately 20% of New York City's total daily power consumption and estimated to reduce CO_2 emissions by 3.9 million tons annually, or roughly equivalent to removing 44% of New York City's vehicles.



Case study 4.B — A co-investment in a company enabling the energy transition by providing essential hardware (such as smart meters and other smart-grid devices), software and services to electricity infrastructure operators.



Case study 4.C — A co-investment in a software-as-a-service provider of renewable energy asset performance management software to more than 200 utility-scale owners, operators and independent power producers and global energy majors, primarily in North America and Europe. The company's software monitors more than 110 gigawatts of wind, solar and energy storage assets worldwide.

200 energy producers

110 gigawatts of clean energy storage

Inflation Sensitive case study

Arevon Energy

Within the Inflation Sensitive asset class, CalSTRS owns 33.3% of Arevon Energy (alongside fellow asset owners APG in the Netherlands and ADIA in Abu Dhabi), which is a fast-growing renewable energy company that develops, builds, owns, and operates solar energy and energy storage projects in diversified power markets across the United States. Arevon ranks as one of the largest solar operating companies in the United States, and its solar and storage businesses positively contribute to the energy transition and climate change mitigation efforts. Arevon is a preeminent developer and holder of renewable energy assets that oversees clean energy projects totaling more than 3 gigawatts (1 gigawatt is equivalent to 1 billion watts and is estimated to power 750,000 homes per year) with an additional 8 gigawatts in its development pipeline. The company is committed to advancing its greenfield development program and to expanding the operating assets that provide solar renewable power to more than 840,000 homes annually.

Arevon represents approximately 8% (or $984 million) of the total CalSTRS Infrastructure Portfolio (which is the largest part of the Inflation Sensitive asset class) net asset value as of June 30, 2024, and is the first direct investment into a renewables platform company for the CalSTRS Infrastructure program. Arevon is an excellent mechanism for ongoing investment into renewables power generation infrastructure. The direct investment into Arevon will help achieve the program's risk and return targets while also maintaining low costs and providing increased control.

Solar energy project in Nevada, United States.

Real Estate case study

Decarbonization via geothermal heating and cooling

We're nearing completion on a two-tower, 400+ unit waterfront residential complex in South Brooklyn (Coney Island), New York, with one of our strategic partners, LCOR, a multifamily developer focused on the Northeastern United States. The Coney Island development epitomizes a broader shift toward greener and more environmentally conscious development.

The project will be 100% electric and features New York City's largest geothermal system, providing heating, cooling and domestic hot water. The project's geothermal system will reduce carbon emissions by more than 60% relative to other residential buildings equipped with conventional heating and cooling systems and will result in lower energy bills for its residents.

Residential complex on Coney Island, New York, United States.

Conclusion

The global net zero transition is continuously evolving. Emissions measurement, policy responses to climate change, technological advances around clean energy delivery and the physical impacts associated with climate change are both complex and dynamic.

We're committed to managing climate-related risks and leveraging climate-related investment opportunities to achieve our mission to support the retirement security of California's educators. We'll continue to make progress on our pledge to move the CalSTRS Investment Portfolio toward net zero emissions by 2050 or sooner.

This report details our activities and comprehensive approach to assessing climate-related risks and opportunities and how we're tracking our progress toward achieving our net zero goals. We'll continue to review our approach, adjust as necessary and report on our strategies annually.