



Investment Committee

Item Number 5 – Open Session

Subject: Pledge to a Net Zero GHG Portfolio by 2050

Presenter(s): Kirsty Jenkinson and Christopher Ailman

Item Type: Action

Date & Time: September 1, 2021 – 45 minutes

Attachment(s): Attachment 1 – An Introduction to Net Zero

Attachment 2 – Summary of Current Net Zero Commitments
(from global governments, companies, investors)

Attachment 3 – CalSTRS and the Low-Carbon Transition

Attachment 4 – CalSTRS Low-Carbon Transition Work Plan
Accomplishments Fact Sheet

Attachment 5 – Meketa Opinion Memo

PowerPoint(s): Net Zero by 2050 Pledge

POLICY

The development of the Investment Committee Work Plan and setting annual objectives/projects is covered by the [Board Governance and Administration Policy](#), Teachers' Retirement Board Policy Manual, Section 500, page 17. If approved, a net zero pledge by 2050 and the accompanying timeline and activities, would become part of the Investment Committee Work Plan.

This item is also covered as part of the CalSTRS Low-Carbon Investment Belief:

Investment risks associated with climate change and the related economic transition—physical, policy and technology driven— materially impact the value of CalSTRS' investment portfolio.

BACKGROUND

At the June 10, 2021 Investment Committee meeting, the Committee requested that staff evaluate whether aligning the investment portfolio with the goals of the Paris Climate Agreement, by setting a net-zero portfolio emissions commitment, would enhance CalSTRS ability to further manage the risks and opportunities associated with climate change and the transition to a low-carbon economy.

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At the July 8, 2021 meeting, the Investment Committee approved the Investment Committee Work Plan which included two work streams: 1) Collaborative Model 2.0 and 2) Action Steps Towards the Low Carbon Future/Plan the Path to Net Zero. As part of the Investment Committee Work Plan, staff provided additional information on a potential net zero strategy for the CalSTRS investment portfolio.

The bulk of the research and materials for the July agenda item is provided as attachments for ongoing reference. **Attachment 1** provides a broad overview of what a net zero economy means. **Attachment 2** includes a summary of global governments, companies, and investors setting net-zero portfolio emissions targets. **Attachment 3** is a summary of CalSTRS' process and diligence activities to date regarding investments and the low-carbon transition. **Attachment 4** is the CalSTRS Low-Carbon Transition Work Plan Accomplishments Fact Sheet. **Attachment 5** is Meketa's opinion memo.

The purpose of this item is to provide Committee members with information and analysis to inform discussion and determine whether the Committee's current low-carbon transition pathway workplan should be expanded to include a net-zero portfolio emissions pledge and provide a proposed action plan to guide future activities.

CALSTRS AND A NET-ZERO PORTFOLIO EMISSIONS PLEDGE

CalSTRS will continue to capture opportunities to invest, manage and mitigate portfolio risks, and engage companies during the low-carbon transition. Staff recognizes that these risks and opportunities are accelerating due to the increasing urgency and momentum from global governments, companies, the capital markets, and fellow investors to achieve the goals of the Paris Agreement through achieving net-zero emissions over the coming decades. Staff has concluded, based on its research and diligence, that the failure to align the CalSTRS portfolio with the goals of the Paris Climate Agreement exposes the portfolio to transition risks, which are reasonably foreseeable given the science and the collective global movement towards net zero.

Staff also believes that a net-zero portfolio emissions pledge would be the continuation of CalSTRS long history of climate risk integration into the investment portfolio. Going back as early as 2004, CalSTRS began investing in climate risk-oriented solutions and integrating climate risk considerations into stewardship efforts. Over the years, stewardship efforts have grown and investments in solutions have increased as the evolution of climate science research and climate risk analysis directed investors and financial markets to enhance their climate-related strategies. Most recently, beginning in Fall 2019, CalSTRS recognized that the transition to a low-carbon economy was accelerating and embarked on a multi-year workplan to better understand and align the investment portfolio with the changing climate landscape. The timeline provided in Table 1 at the end of this document highlights the history of CalSTRS climate risk management efforts.

While the Board's low-carbon study and workplan have created a strong foundation to help position the portfolio for a low-carbon future, staff believe it is in the best interests of the

System’s beneficiaries and participants for CalSTRS to set net-zero portfolio emissions as a destination – or ‘north star’ – to more comprehensively account for the pecuniary effects of decarbonization on the CalSTRS portfolio, over the appropriate time horizon(s), and to allocate capital toward Paris-aligned activities and mitigate climate-related risks.

As discussed at the July Investment Committee meeting and building upon the existing foundation of extensive research and diligence to date, there are four important steps in setting a path toward net zero by 2050: 1) Pledge, 2) Plan, 3) Proceed, and 4) Publish. Below is language the committee could adopt as a Net Zero Pledge and an implementation plan that the CIO and Investment staff believe could be used as a framework for CalSTRS:

(1) PLEDGE: Adopt a Net Zero carbon commitment or ‘north star’ as suggested below:

CalSTRS recognizes the risks and opportunities presented by the foreseeable transition to a low-carbon economy, as well as the global acceleration towards alignment with the science-based emissions targets of the Paris Climate Agreement. In order to provide sustainable benefits to California’s educators, CalSTRS is committed to achieving a net zero investment portfolio by 2050 or sooner.

(2) PLAN: Implement a commitment through a net zero action plan with three core components:

- **RISK measurement and management:** build on the transition readiness assessments already underway to estimate current portfolio emissions, to establish a baseline for interim emissions reduction goals to 2050.
- **RETURN opportunities:** expand investments in low-carbon solutions that benefit from the transition to net zero and meet CalSTRS risk-return objectives.
- **INFLUENCE:** continue stewardship activities to challenge and engage policy makers and companies, in collaboration with global investor peers, to take actions to achieve a net zero economy by 2050 or sooner.

Given the complexities involved in implementing a net zero action plan, staff believe that the following principles should underpin its development and execution:

- It should build on and expand on the analysis and activities already underway across the CalSTRS portfolio under the Board’s low-carbon workplan (as described in the Attachments).
- It should rely on extensive research, consultation with external experts, clearly articulated decision-making processes and oversight procedures.
- It should be reviewed at least annually reflecting the need for it to be adaptive and responsive to changing market norms and developments, as well as lessons learned, and challenges encountered.

(3) PROCEED: Establish a set of actions for the next year focused on **five** key areas:

- Internal governance structures
 - Adopt decision-making processes to ensure clarity for Investment staff leadership across asset classes.
 - Leverage, and as necessary re-purpose, the Green Initiative Task Force (or ‘Green Team’ - a cross-asset class working group currently used to identify and understand investment opportunities and risk management strategies addressing climate change) to train and direct staff in operationalizing a path to net zero.
- Methodologies and frameworks to support net-zero commitments
 - Review all existing methodologies and frameworks to inform the most appropriate net zero strategies for different asset classes.
 - Determine any required external expertise, including identifying, procuring, and hiring expert external consultants as needed, to guide strategy.
- Portfolio emissions measurement
 - Estimate current portfolio emissions across asset classes, where possible within the year, to establish a baseline for initial interim goals.
- Interim goals
 - Set interim goals, informed by baseline emissions estimates, that support the three components of the net zero action plan and align with CalSTRS investment policies and overall risk-return objectives.
- Communications
 - Create a communications plan to effectively educate and inform stakeholders about CalSTRS net zero path.

Below is a proposed timeline for the upcoming fiscal year:

GOAL	ACTIONS						
	Sept. 2021	Nov. 2021	Jan. 2022	Mar. 2022	May 2022	July 2022	Sept. 2022
Develop internal governance structures: oversight/decision making; operational; communications	Present goals & timelines		Implement governance structures		Check-in on effective governance		
Assess and choose best net zero frameworks & methodologies/metrics	Present goals & timelines		1) Complete peer analysis on net zero landscape: goals, metrics & targets 2) Identify gaps & external resources needed 3) Launch RFP to secure resources as needed		Identify appropriate frameworks, collaborations & alliances		Secure external resources: partners; consultants; data providers; platforms
Measure/estimate carbon exposure of STRS portfolio	Present goals & timelines				Provide CO2 exposure for public portfolios		Provide preliminary CO2 exposure analysis for private portfolios
Establish interim net zero goals/targets for Risk, Return & Influence (RRI) framework	Present goals & timelines		Present SISS stewardship plan including <u>Influence</u> partnerships, metrics & targets		1) Identify interim <u>Risk</u> metrics & targets for public markets 2) Determine exposure to <u>Return-oriented</u> investments		1) Finalize interim <u>Risk</u> metrics & targets for public markets 2) Finalize <u>Influence</u> partnerships, metrics & targets 3) Set interim targets for <u>Return-oriented</u> investments
Communicate net zero strategy to TRB & stakeholders	Present goals & timelines		Provide net zero progress update to TRB & publish interim 'Green Team' report		Provide net zero progress update to TRB including update on SISS Private Portfolio & <u>Return-oriented</u> investments		Provide net zero progress update to TRB

(4) PUBLISH: Provide and encourage regular reporting on the progress toward net zero by:

- Leverage existing reporting mechanisms (including the annual Green Initiative Task Force Report and the quarterly Value of Engagements) to report on CalSTRS' progress implementing a net zero action plan.
- Continue to advocate for improved corporate climate-related reporting and disclosure in alignment with the recommendations of the Taskforce on Climate-Related Financial Disclosures (TCFD) and the metrics and targets of the Sustainability Accounting Standards Board (SASB), by the Securities and Exchange Commission (SEC) and other global regulators.

CONSIDERATIONS

It is important to fully understand the challenges, dependencies, risks, and opportunities involved in implementing a net-zero portfolio emissions pledge. Given the long-term nature of this pledge, reaching CalSTRS net zero target will be dependent on meaningful action by all of CalSTRS investment partners, companies, policy makers, and future Investment Committees. The current Investment Committee will need to evaluate how a net zero pledge aligns with CalSTRS' current investment philosophy, policies, and structures, such as a traditional passive investing approach. As the Investment Committee knows, active management comes with a wider tracking error, both positive and negative. The Committee will also need to evaluate how it benchmarks investments and how it designs incentive structures and weighs such factors as it evaluates the most appropriate approach for CalSTRS in managing risk and return. Additionally, consideration will need to be given to the time and resources that will be necessary to develop and implement a net zero pledge and action plan.

One of the biggest near-term challenges inherent to a net zero commitment is the evolving and rapidly changing science, technology, policy, and regulatory environment around climate change. While net zero by 2050 may be the current global consensus, future learning, analysis, and evolving strategies at the macro level may result in the need for CalSTRS to adapt and/or adopt different portfolio emissions targets. It is important for investor fiduciaries to make informed decisions and appropriately measure progress; however, the lack of robust and comprehensive carbon emissions data poses a challenge to implementing a net zero strategy, including with respect to the determination of appropriate carbon-related metrics and appropriate interim emission reduction goals that align with both fiduciary duties and accepted climate science. While there is considerable climate data available on public securities markets, data and measurement systems for private markets are undeveloped and will need to improve. CalSTRS and partners can certainly play a role in advocating for these advancements.

Timing is another challenge. Taking action too aggressively could lead to short-term underperformance while not taking strong enough action could lead to longer-term underperformance. The duty of impartiality requires fiduciaries to undertake a sophisticated analysis to balance the varying interests of beneficiaries, including interests over different time horizons. As a long-term investor, CalSTRS will have to weigh all the relevant considerations to determine a prudent approach to maximizing risk adjusted returns over the appropriate time horizon.

Despite the challenges, there are significant opportunities associated with CalSTRS making a net zero commitment. As a long-term investor, aligning the CalSTRS portfolio with what is clearly the long-term direction of society, governments and financial markets will allow CalSTRS to be best positioned for long-term success. A net zero commitment will allow for more informed and robust climate risk management and will allow the Fund to identify and take advantage of the many net zero oriented investment opportunities that are emerging.

Fulfilling a net zero pledge will require continuous adaptation over the next two to three decades. An implementation plan that can monitor, adjust, and adapt to changing external circumstances will best equip CalSTRS to manage the inherent uncertainties and risks associated with a net zero pledge. Furthermore, such an approach will recognize the role that CalSTRS must also play in influencing governments, companies, and the financial markets to achieve economy-wide net zero goals that will benefit Fund participants long into the future.

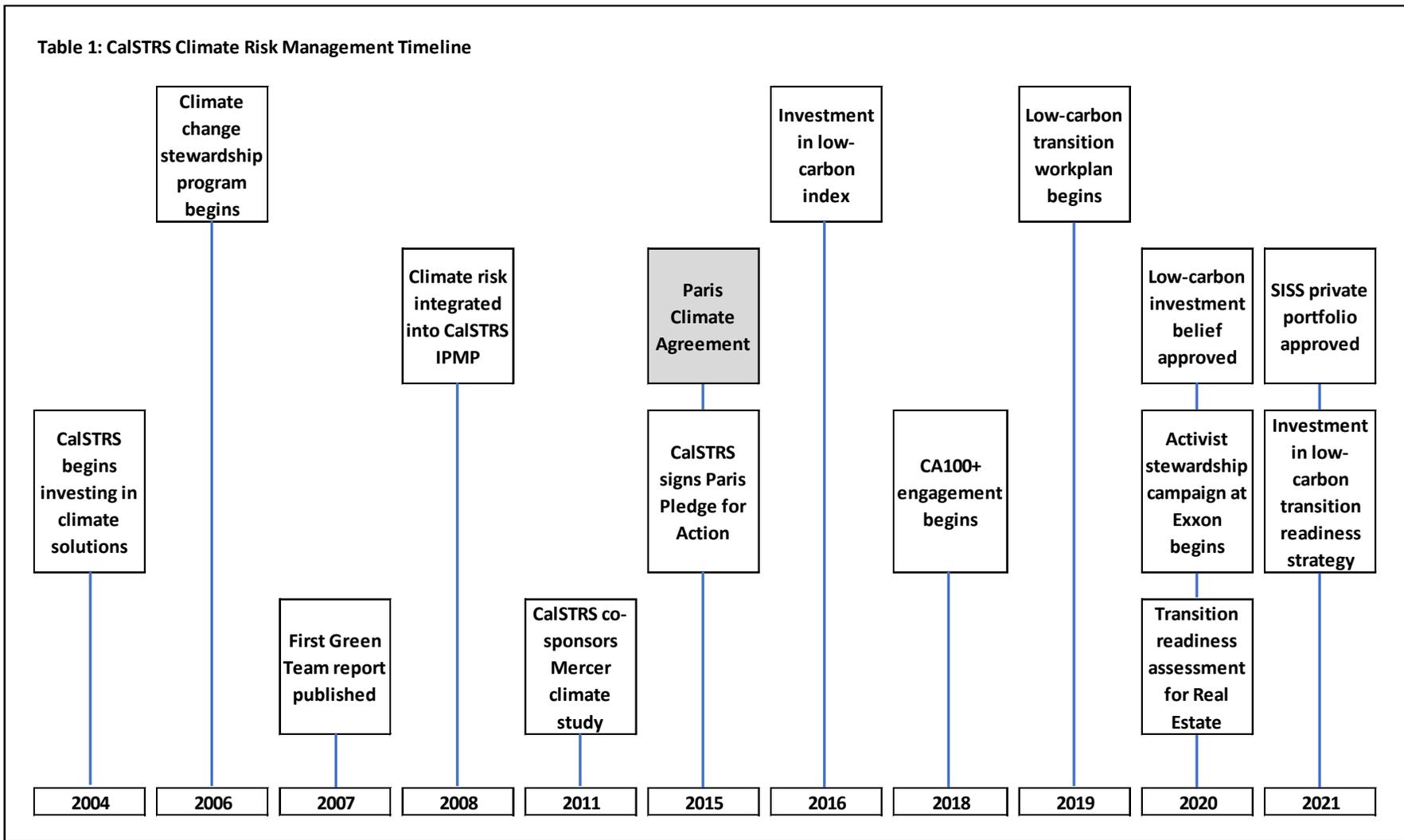
RECOMMENDATION

Staff recommends the Committee adopt a Net Zero Pledge:

CalSTRS recognizes the risks and opportunities presented by the foreseeable transition to a low-carbon economy, as well as the global acceleration toward alignment with the science-based emissions targets of the Paris Climate Agreement. In order to provide sustainable benefits to California's educators, CalSTRS is committed to achieving a net zero investment portfolio by 2050 or sooner.

In addition to the pledge, staff recommends the Committee approve the proposed action framework and timeline and consider the climate-related goals of the State of California, to the extent that such goals are consistent with the Board's fiduciary duties, when implementing the net zero pledge.

Table 1: CalSTRS Climate Risk Management Timeline





AN INTRODUCTION TO NET ZERO

Over the past year, and particularly since the start of 2021, there has been an increasing focus on all actors in the global economy establishing net-zero emissions goals.

What does net zero mean¹? Net-zero emissions will be achieved when all greenhouse gas (GHG) emissions released by humans are counterbalanced by removing GHGs from the atmosphere. To achieve this, all human-caused emissions will need to be reduced as close to zero as possible. Any remaining GHGs then need to be balanced with an equivalent amount of carbon removal.

How does net zero relate to the Paris Climate Agreement? Under the Paris Agreement, countries agreed to limit warming well below 2 degrees C and ideally to 1.5 degrees C. Latest science (from the Intergovernmental Panel on Climate Change, IPCC) suggests that in order to reach these temperature goals, net-zero emissions will be required by mid-century. If the world reaches net zero by 2040, the chance of limiting warming to 1.5 degrees C is considerably higher.

What is the Race to Net Zero²? The United Nations has established a “Race to Zero” campaign calling on countries, regions, cities, companies, investors, and civil society/non-governmental organizations to submit plans to reach net-zero emissions by 2050. Over the past year, commitments have been increasing very rapidly ahead of the United Nations climate negotiations (COP 26) in Glasgow in November 2021.

Current commitments come from: 120 countries, 708 cities, 24 regions, 2,360 businesses, 163 investors and 624 higher education institutions. Estimates consider that 60-70% of global GDP is now covered by a net-zero emissions commitment. **Attachment 2: Summary of Current Net Zero Commitments** provides more details on these commitments.

Closer to home:

- **The U.S.** has set a “goal of achieving net-zero greenhouse gas emissions by no later than 2050 and of limiting global warming to 1.5 degrees Celsius, as the science demands.” This

¹ For additional information on common questions relating to net-zero: <https://www.wri.org/insights/net-zero-ghg-emissions-questions-answered>

² <https://unfccc.int/climate-action/race-to-zero-campaign#eq-3>

goal is supported by a target – announced by President Biden in April 2021³ – for the U.S. to achieve a 50-52% reduction from 2005 levels in GHG pollution in 2030.

- **California** has multiple climate policy goals and targets including: reducing GHG emissions 40% below 1990 levels by 2030, providing 100% of the state's electricity from clean energy by 2045, developing zero net energy buildings, adding 5 million zero-emission vehicles by 2050 and prohibiting the sale of new gasoline-powered vehicles by 2035. In addition, in 2018, an Executive Order committed California to achieving economy-wide 'carbon neutrality' (which broadly aligns with net-zero) by 2045.

How are net zero commitments being implemented? Multiple frameworks are being developed to support the net zero commitments being made by different parties, including investors, and to ensure their accountability. The Race to Zero campaign requires four broad criteria to be met:

- **Pledge:** the head-of-organization pledges a commitment to reach net-zero GHGs as soon as possible, and by midcentury at the latest. Sets an interim target to achieve in the next decade.
- **Plan:** within one year, explain what actions the organization will take to achieve interim and longer-term pledges, especially in the short-to-medium term.
- **Proceed:** take immediate action toward achieving net zero, consistent with delivering interim targets.
- **Publish:** commit to report publicly progress against interim and long-term targets, as well as the actions being taken, at least annually.

There is broad acceptance that achieving a net zero global economy within the next decades will be very challenging for all actors involved and will require significant economy-wide changes. The bold, yet required, ambitions to address the worst impacts of climate change are matched by the acknowledgment of the challenges that must be overcome. Those committing to a pledge recognize that it is a serious commitment and one that is dependent on the world's governments, companies and financial markets moving in the same direction over multiple decades.

OPTIONAL READING MATERIALS

World Resources Institute, Net Zero Q&A: <https://www.wri.org/insights/net-zero-ghg-emissions-questions-answered>

³ <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>

World Economic Forum blog by Ontario Teachers' Pension Plan:
<https://www.weforum.org/agenda/2021/03/investors-3-questions-net-zero>

June 2021 Economist Leader article: <https://www.economist.com/leaders/2021/06/12/how-green-bottlenecks-threaten-the-clean-energy-business>

Guardian overview of U.S. activities required to meet net zero goals:
<https://www.theguardian.com/us-news/2021/mar/15/race-to-zero-america-emissions-climate-crisis>



SUMMARY OF CURRENT NET ZERO COMMITMENTS

Under the 2015 Paris Agreement, countries agreed to limit global warming to well below 2 degrees C (3.6 degrees F), ideally to 1.5 degrees C (2.7 degrees F). In 2018, the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5 degrees Celsius clarified the minimum action governments need to take to fulfill their pledge: to reach the Paris Agreement's temperature goals, and avoid the worst climate impacts, global greenhouse gas (GHG) emissions will need to drop by half by 2030 and reach net zero around mid-century. Today, pledges to reach net-zero greenhouse gas emissions span governments (regions, countries, states, and cities), corporate strategies, and investor portfolio targets.

GOVERNMENT NET ZERO COMMITMENTS

As of the March 2021, Energy and Climate Intelligence Unit (ECIU) report [Taking Stock: A global assessment of net zero targets](#), national net zero pledges covered 61% of global greenhouse gas emissions, 68% of GDP, and 56% of the global population. The status of these pledges ranges widely, including achieved (two), in law (six), proposed legislation (six), in policy document (20, including the U.S.) and proposed/target under discussion (98). Countries, states, regions, and cities are expected to increase their immediate actions and provide greater clarity on their net zero targets and begin turning pledges into concrete plans in the coming months before the U.N. Climate Change Conference of the Parties 'COP26' in Glasgow in November.

Country Examples

The pledges vary widely, and many are continually evolving. In 2017, Sweden became the first nation to put into law a net zero target by mid-century (2045). In 2019, the U.K. became the first G7 economy to legislate for net zero by 2050. France, Denmark, New Zealand, and Hungary have also enshrined net zero by 2050 into law.

The E.U. outlined its 2050 net zero target in late 2019 and early 2020, then in December 2020, improved its 2030 target to be in line with the 2050 goal. In September 2020, the President of China announced at the U.N. General Assembly that China would peak emissions by 2030 and achieve carbon neutrality before 2060. Japan and South Korea followed, with 2050 target dates. In the U.S., President Biden issued an Executive Order pledging the U.S. to net zero by 2050 in his first week in office in January 2021.

Together, China, the U.S., and the E.U. comprise the world’s three largest emitters, and account for about half of both global GDP and global emissions.

COMPANY NET ZERO COMMITMENTS

As of November 2020, over one-fifth (21%) of the world’s 2,000 largest public companies had net zero commitments, representing annual sales of nearly \$14 trillion and 33% of total sales across the top 2,000 public companies. This number has significantly grown in just the last two years and is expected to increase heading into COP26 in November.

According to the March 2021 ECIU report [Taking stock: A global assessment of net zero targets](#), certain industries have led the way in making net zero commitments. For example, more than two thirds of companies (by sales) in the Household & Personal Products industry have net zero targets. In contrast, the lowest coverage by sales is in the Semiconductors industry, at around 5%. Aerospace & Defense is little higher, at just over 10%. Until significant advances in technologies, such as hydrogen-based energy generation are made at scale, energy-intensive industries have a less clear path to achieving net zero capabilities (thus explaining why certain sectors are able to commit sooner as the direction of travel for them is clearer).

Significant discussions around capital expenditure planning within energy intensive industries are taking place to ensure that innovation increases and that the levelized cost of low to no-emissions technology continues to decrease. According to the International Energy Agency (IEA), the iron and steel industry accounts for approximately 4-5% of total world CO2 emissions. Leading iron and steel companies (such as CalSTRS-led Climate Action 100+ engagement company Nippon Steel), are investing in lowering the emissions of its current process and innovating on its use of hydrogen and carbon capture and storage.

Company Examples

Microsoft: the two trillion-dollar market cap technology company, has a goal to become carbon negative by 2030. By 2050, Microsoft will remove from the environment all of the carbon the company has emitted, either directly or by electrical consumption, since it was founded in 1975.

Microsoft’s approach is based on seven elements including comprehensive carbon foot printing, deploying \$1 billion to accelerate the development of carbon reduction and removal technologies, empowering customers and supply chain to reduce carbon footprints, promoting carbon-related public policy issues, and enlisting its employees in advancing innovation and contributing to these goals.

ENEOS: is a CalSTRS-led Climate Action 100+ Japanese petroleum and metals conglomerate. It aims to be carbon neutral in its own CO2 emissions in 2040. ENEOS will be pursuing this by expanding its use and business in renewable energy, CO2- free hydrogen, and carbon capture technological innovation. ENEOS also plans to expand its mobility business to be more aligned to

electric vehicles and hydrogen and will invest in automated operations of refineries and smelters to help reduce emissions. The company also announced a \$14B capital expenditure plan over the next three years to help drive its transformation into a low-carbon company.

INVESTOR NET ZERO COMMITMENTS

There are currently a variety of asset owner and asset manager initiatives focused on supporting and driving net zero portfolio commitments. While investor alliances differ in terms of their timelines, metrics, and commitments, they share the common goal of achieving carbon emissions reductions within investment portfolios in a manner that aligns with a 1.5 degrees Celsius limit to global temperature rise. To date, aggregate investor net zero commitments exceed \$40 trillion assets under management.

The [Net Zero Asset Managers Initiative](#) is an international group of 87 asset managers, collectively managing \$37 trillion in assets, committed to supporting the goal of net-zero greenhouse gas emissions by 2050 or sooner, in line with global efforts to limit warming to 1.5 degrees Celsius. Initiative members agree to set interim targets for 2030 which include:

- Measuring scope 1, 2 and, where material, scope 3 portfolio emissions
- Reducing CO2 emissions by 50% within their investment portfolios
- Creating investment products aligned with net-zero emissions by 2050
- Implementing stewardship and engagement strategies that are consistent with the net zero commitments

Members of the Net Zero Asset Manager Initiative include: BlackRock, Vanguard, State Street Global Advisors, Lazard, Schroders, Allianz Global Investors, and UBS.

The [Net Zero Asset Owners Alliance](#) is an international group of 42 institutional investors, representing approximately \$6.6 trillion in assets under management. These asset owners have committed to transitioning their investment portfolios to net zero by 2050. Launched in September 2019, the Net Zero Asset Owners Alliance signatories work together to align their portfolios with a 1.5 degrees Celsius global warming scenario based on the [IPCC 1.5C Report](#).

The Net Zero Asset Owners Alliance requires members to set interim carbon reduction targets every five years, beginning in 2025 and to periodically report on progress on an ongoing basis. Members of this alliance include: CalPERS, CDPQ, Caisse des Depots, CBUS Super Fund, Pension Danmark, Swiss Re, and Unilever.

The industry-led [Net Zero Banking Alliance \(NZBA\)](#) hosted by the United Nations Environment Programme Finance Initiative (UNEP FI) and co-launched in April 2021 with the [Prince of Wales' Sustainable Markets Initiative \(SMI\)](#), is the newest net zero alliance. NZBA brings together an initial cohort of 43 of the world's biggest banks with a focus on delivering the banking sector's

ambition to align its climate commitments with the Paris Agreement goals with collaboration, rigor, and transparency.

The [Paris Aligned Investment Initiative](#) (PAII) is an investor-led global forum enabling investors to align their portfolios and investment activities to the goals of the Paris Agreement. Established in May 2019, the PAII has 118 investor members representing over \$34 trillion in assets. The initiative's overarching goal is to enable investors to transition investment portfolios to net zero by 2050 or sooner. PAII participants agree to set objectives and targets for scope 1, 2 and 3 emissions, including an interim target consistent with achieving 50% global reduction of CO2 emissions by 2030. These objectives and targets align with the [IPCC 1.5C Report](#). Initiative members also agree to implement stewardship and engagement strategies, with companies, managers, credit rating agencies, stock exchanges, consultants and data providers that are consistent with achieving net-zero greenhouse gas emissions by 2050 or sooner.

Members of this initiative include: ABP, AP2, Brunel, BT Pension Scheme, New York State Common, and Scottish Widows.

The [Investor Agenda for Climate Action Plans](#) (ICAPs) is a global forum that provides resources to enable the acceleration of investor action towards a net-zero emissions economy. There is no formal membership or signatories, rather ICAPs serves as a repository of investment-related resources and tools to support the investment community in making net zero portfolio commitments.

Beyond the aforementioned commitments, pension funds globally continue to make independent greenhouse gas net zero investment portfolio commitments in line with limiting global temperature rises to 1.5 degrees Celsius by 2050 or sooner.

Pension Fund/Asset Owner Examples

CDPQ (Canada)

[CDPQ](#) is a member of the Net Zero Asset Owner Alliance and has made a commitment to net-zero emissions in their portfolio by 2050. To help reach this target, in 2017 CDPQ committed to factoring climate change into every investment on a go-forward basis, increasing low carbon investments by 80% by 2020 (104% growth achieved), reducing their carbon footprint by 25% by 2025, and leveraging their corporate and public policy engagement to prioritize carbon emission reductions.

OTPP (Canada)

OTPP has made a [commitment](#) to a net-zero emissions portfolio by 2050. The organization is not part of any formal investor alliance or initiative and plans to release 2025 and 2030 interim targets

ahead of COP26 this fall. To date, OTPP has completed a portfolio wide carbon foot printing assessment. To achieve its 2050 target OTPP will:

- Increase investments in climate-friendly solutions
- Ensure portfolio companies manage and report emissions annually
- Work with portfolio companies to achieve net-zero emissions
- Use proceeds from green bond offerings to invest in climate friendly opportunities
- Increase the resilience of their assets with physical risk assessments of their direct holdings
- Advocate for clear climate policies and partner with global organizations to effect change.

Australian Super (Australia)

Australian Super has made a [commitment](#) to achieve net-zero emissions within its portfolio by 2050. To achieve its target, Australian Super will:

- Increase low-carbon investments (including an interim goal of at least \$1 billion by 2022)
- Incorporate the risks and opportunities of climate change into each investment going forward
- Require all companies in their portfolio incorporate a net zero by 2050 target into their strategy
- Will monitor and report the portfolio's emissions alignment with its 2050 target

APG (Netherlands)

APG is a member of the Net Zero Asset Managers Initiative and has made a [commitment](#) to a net zero portfolio by 2050. Specifically, APG committed to work with its clients to decarbonize their portfolio, consistent with an ambition to reach net-zero emissions by 2050 or sooner across all assets under management. The organization will set interim targets and review them every five years with a view of ratcheting up the proportion of assets under management that are net zero until all are covered.

New York State Common Retirement Fund (NYSCRF) (U.S.)

NYSCRF is a member of the Paris Aligned Investor Initiative and has made a [commitment](#) to a net zero portfolio by 2040. The announcement includes a commitment to complete a review of its investments in the energy sector and set a minimum standard to assess transition readiness and climate-related investment risk within four years from making the net zero commitment. Further the minimum standards will, where consistent with fiduciary duty, inform divestment decisions for companies that fail to meet the minimum standards. The organization plans to report on progress annually and will issue interim targets in the fall of 2021.

CalPERS (U.S.)

CalPERS is a member of the Net Zero Asset Owner Alliance and by [association](#) has signaled a commitment to a net zero portfolio by 2050. No specific strategies or interim targets have yet been set and the organization has conducted a climate value at risk (CVaR) analysis on its fixed income and public equities portfolio to assess the portfolio's alignment to global temperature warming potential by 2050.

SFERS (U.S.)

SFERS has made an aspirational [commitment](#) to a net zero portfolio by 2050. To achieve its 2050 target the plan will:

- Outline steps to integrate considerations of climate risk across asset classes and achieve net-zero emission by 2050 (including establishing interim targets every five years)
- Build on existing SFERS' climate strategies to address climate risks including Climate Transition Risk Framework for Oil & Gas and Climate Transition Risk Framework for Utilities
- Be consistent with SFERS' 3 Pillar ESG Platform, by incorporating proxy voting, shareholder engagement, and policy advocacy efforts alongside investment related actions
- Report on progress annually

New Zealand Super (New Zealand)

In 2016 New Zealand Super announced a [strategy](#) to make the investment portfolio more resilient to climate change and the transition to a lower carbon economy. One element of the strategy was to reduce carbon emissions intensity for the Fund by 20% and reduce the carbon reserves of the Fund by at least 40% by 2020. The goals were achieved in 2019 and as a result the Fund has set 2025 [interim targets](#) to:

- Reduce the Fund's carbon emissions intensity by at least 40%
- Reduce the Fund's carbon reserves exposure by at least 80%

While New Zealand Super has not publicly made a net zero by 2050 commitment, the Fund has set 2025 interim carbon emission reduction goals that directionally align with net zero investor initiatives.



CALSTRS AND THE LOW-CARBON TRANSITION

CalSTRS has been actively integrating material environmental factors into the investment portfolio since 2003. The Green Initiative Task Force (known as the “Green Team”) was established in 2007 (and still exists today) as a cross-asset class working group, to identify, analyze and propose investment opportunities and risk-control strategies addressing climate change.

Since the drafting of the [Paris Climate Agreement](#) in December 2015, and as a result of increasing shifts in technology and consumer preferences, our climate change-related investment activities have accelerated and included the following important milestones:

In **2016**, we [invested in a new low-carbon public equities index with significantly lower exposure to carbon emissions](#), and in **2017**, we [implemented thermal coal exclusions](#)¹.

In May **2019** the Teachers’ Retirement Board approved the transition to a low-carbon future as a priority and workplan project for the Investment Committee. In the subsequent months, the Investment Committee participated in a series of educational presentations, including a half-day Investment Committee offsite in October 2019. The educational presentations were conducted by a diverse range of thought leaders and experts in climate science, academia, energy research and finance. Presenters to the Committee included:

- [Brian Deese](#): Director of the National Economic Council for President Joe Biden, former head of Sustainable Investing at BlackRock.
- [John Goldstein](#): Managing Director of the Goldman Sachs Sustainable Finance Group.
- [Trevor Houser](#): Partner and lead of the energy and climate team at Rhodium Group (an independent research provider that combines economic data analytics and policy insight to help decision-makers in both the public and private sectors understand global trends).
- [Alicia Seiger](#): Lecturer at Stanford Law School and the lead of sustainability and energy finance initiatives at Stanford Law, Stanford Graduate School of Business, and the Stanford Precourt Institute for Energy.

¹ These exclusions were implemented after thorough research, analysis, due diligence, consideration and documentation by staff, the CalSTRS Committee on Responsible Investment (CRI) and the Investment Committee.

- Ethan Zindler: Head of Americas at BloombergNEF, a provider of insight, data and news on clean energy, advanced transport, commodities, and emerging technologies.

The October 2019 offsite was followed by twenty months of additional education, study and analysis, similar to the process adopted in the [New York State Common Retirement Fund's Climate Action Plan](#).

The Teachers' Retirement Board's low-carbon transition workplan established a five-prong strategy in 2020:

- **Investment Belief:** to develop an additional investment belief related to the low-carbon economic transition.
- **Risk Analysis:** to deepen the understanding of low-carbon transition-related risk, both physical and transition, (also referred to as 'transition readiness') across asset classes.
- **Investment Opportunities:** to expand investments in low-carbon solutions that are additive to the goals of the Total Fund.
- To support these objectives, CalSTRS staff also identified the need to enhance the fund's **Stewardship** activities as well as related communications and **reporting** strategies.

Investment Belief

The Board [adopted](#) a new [low-carbon investment belief](#) in January 2020. Climate change is a complex and challenging topic and so the educational series and the adoption of the new investment belief helped to create a common understanding among the Board and staff.

Risk Analysis

As climate change shifts economies and societies away from high-carbon products toward lower carbon products, some companies, industries, and regions come out ahead and some fall behind. As a result, we recognize that this transition impacts the long-term investment performance of the assets in which we invest.

Internally we are using the concept of 'transition readiness' to help evaluate our portfolio's future preparedness for the low-carbon transition. This is a complex task because available data and financial analysis on climate-related transition risks are at an early development stage in the global investment industry. Understanding that climate risk manifests itself differently across different asset types, we have developed two initial partnerships to help us understand the physical, technological, and policy-related risks that may affect specific investments:

- **Physical Risk Analysis:** During 2020 and 2021, staff has been partnering with [Rhodium Group](#) to deepen our understanding of physical climate risk, with an initial focus on Real Estate. Rhodium is providing independent research, data, and analysis on the economic

risks of climate change which is being integrated into our internal risk management processes in the Real Estate portfolio.

- Transition Risk Analysis: in March 2021, CalSTRS funded an innovative \$1 billion [low-carbon transition readiness public equity strategy](#) through which we expect to gain insights into how climate risk is being priced (or mispriced) in public markets. Staff is also piloting a nascent public markets-focused climate risk management tool that seeks to help investors better model how emissions scenarios and carbon pricing risks could influence security pricing.

These programs are intended to inform investment decisions across our portfolios and give us a competitive market advantage.

Investment Opportunities

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.

As demonstrated in the Investment Branch Business Plans for 2021-22, significant investments in low-carbon solutions already exist across the CalSTRS portfolio including: green bonds in the fixed income portfolio, green and LEED buildings in the real estate portfolio, dedicated low-carbon strategies in public equities and renewable power, agriculture, and timberland investments in the inflation sensitive portfolio.

To further leverage existing partners and source new opportunities, in March 2021, the Investment Committee approved a new [SISS Private Portfolio](#) to create a systematic platform to expand sustainability-focused investment opportunities in private markets, including low-carbon solutions, that meet the Fund's risk-return objectives. This portfolio supplements the existing \$10 billion SISS Public Portfolio which includes \$3.7 billion in a low-carbon public equity index, \$1 billion in a low-carbon transition readiness risk-controlled public equity strategy and over \$3 billion in actively managed equity strategies.

The SISS Private Portfolio changes and enhances the dynamics of internal staff governance for certain investments by enabling a collaborative approach to investment due diligence and recommendations. The Portfolio also expands CalSTRS understanding of how specific investments demonstrate positive contributions to a more sustainable global economy, including mitigating and adapting to climate change. This is an evolving, but fast-moving element of the global investment industry, so this new portfolio will expand CalSTRS expertise in the intersection between risk-adjusted returns and sustainability drivers and outcomes, for the benefit of California's educators.

Stewardship

CalSTRS is a long-term active owner and steward of capital that is being managed to impartially meet the Fund’s future obligations across participant generations. For many decades we have used our voice to drive change and enhance the value of the CalSTRS Investment Portfolio over the long term. We engage hundreds of companies each year on their governance structures, business strategies and disclosures through direct access to their corporate boards and management. We have demonstrated that engagement can effectively drive change that results in a positive impact on our Fund and the companies we engage, as well as society and the environment. Furthermore, stewardship is a strategy for impacting climate policy and addressing systemic risks that may not be fully avoided through diversification.

The low-carbon transition remains a [Stewardship Priority](#) and we expect companies to demonstrate their resilience to shifting public policies, technological advancements and physical impacts associated with climate change. Collaborative investor engagement initiatives like the [Climate Action 100+](#) have secured corporate emissions reduction commitments and CalSTRS has also pioneered new, escalated engagement strategies like [activist stewardship](#) as demonstrated by the May 2021 appointment of [three new board directors at ExxonMobil](#) to fill gaps in the board’s needed skill sets.

Reporting

CalSTRS is committed to being transparent about our goals, ambitions, and activities to multiple audiences, including our beneficiaries, our partners, and our global investment peers. Further details describing the [progress](#) and results of the low-carbon transition study and work plan can be found in **Attachment 4: Low-Carbon Transition Work Plan Accomplishments Fact Sheet** and also in the following reports: [Green Initiative Taskforce Report 2020](#); [Green Initiative Taskforce Report 2019](#). Additional updates are also provided on our [low-carbon transition](#) and [value of engagement](#) webpages.

Low-Carbon Transition Work Plan Accomplishments (As of April 2021)

Background

CalSTRS has a long history of managing climate risk within its investment portfolio.

In May 2019, the Teachers' Retirement Board directed staff to develop a comprehensive work plan to understand the global low-carbon transition and its impacts on CalSTRS' investments.

Three priority action items came out of the work plan:

- To develop an additional investment belief related to the low-carbon economic transition.
- To deepen the understanding of low-carbon transition-related risks, both physical and transition, across different asset classes.
- To expand investments in low-carbon solutions that are additive to the goals of the Total Fund.

To support these objectives, CalSTRS staff also identified the need to enhance the fund's stewardship activities as well as related communications and reporting strategies.

Priority

1

Build board and staff consensus on the portfolio impacts of the low-carbon transition

Why is this important? Climate change is a complex topic, and CalSTRS understands it will impact

portions of the investment portfolio in different ways. To establish a common understanding of climate investment risk across the board and staff, CalSTRS hosted an educational series on the global low-carbon transition. The series included presentations from a diverse range of climate change thought leaders and experts.

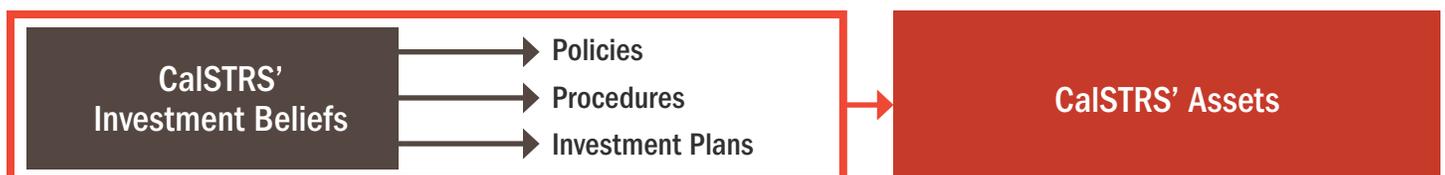
CalSTRS' [investment beliefs](#) provide a foundational framework for all of CalSTRS' investment decision-makers. They represent CalSTRS' unique view of the global investment markets and our vision for participating in these markets to meet our fiduciary goal. Our investment beliefs are intended to guide and align CalSTRS' decision-making leaders as they develop policies, procedures and plans for investments.

Progress update

In January 2020, the Teachers' Retirement Board approved a new low-carbon investment belief.

Investment Belief 9

Investment risks associated with climate change and the related economic transition—physical, policy and technology driven—materially impact the value of CalSTRS' investment portfolio.





CalSTRS has invested in low-carbon index-like strategies since 2017. As of April 2021, our low-carbon index-like investments had grown to **\$4.5 billion.**

Priority
2

Evaluate the transition readiness of different investments by asset class

Why is this important? CalSTRS is seeking to understand how low-carbon related risks, both physical and transition, can impact investments within our portfolio, with an initial focus on our Real Estate and Global Equity asset classes. Climate-related data are rapidly

evolving, and climate risk is impacting our asset classes in different ways. As there is no ‘quick and easy’ way to evaluate climate risk across a large and complex investment portfolio, CalSTRS is analyzing the transition readiness of different asset classes in a phased approach. These analyses will help CalSTRS determine how well positioned the investment portfolio is for the global low-carbon transition and inform ongoing investment decisions.

CalSTRS **recently invested** \$1 billion in two innovative low-carbon transition readiness equity exchange-traded funds (ETFs) launched by **BlackRock**. These strategies overweight companies that are better positioned for the low-carbon transition, allowing us to gain insights into how climate risk is being priced (or mispriced) in public equity markets.

Progress update

Real Estate

Because physical climate risks—like temperature, precipitation, sea level rise, floods, hurricanes and wildfires—will have the most acute economic impacts on real assets, CalSTRS is first assessing physical climate risks within our Real Estate asset class.

CalSTRS has selected **Rhodium Group** to provide independent research, data and analysis on the economic risks of climate change to our real estate portfolio. We will integrate this analysis into our risk management for this asset class.

Global Equities

CalSTRS has invested in low-carbon index strategies since 2017. As of April 2021, our low-carbon index-like investments had grown to \$4.5 billion.

CalSTRS recently funded an innovative \$1 billion low-carbon transition readiness equity strategy. Through this strategy, we expect to gain insights into how climate risk is being priced (or mispriced) in public equity markets.

Priority
3

Expand investments in new climate-related solutions

Why is this important?
CalSTRS has the

opportunity to deploy capital, at scale, into investments that both meet the risk-return goals of the Total Fund and accelerate the low-carbon transition.

Progress update

In March 2021, the Teachers’ Retirement Board unanimously approved **changes** to the Sustainable Investment & Stewardship Strategies (SISS) **investment policy**, allowing staff to expand the fund’s sustainable and low-carbon investments to private asset classes. CalSTRS is creating a systematic platform to further expand sustainable investment opportunities in private equity, infrastructure, and real estate. Over the coming years, we anticipate investing \$1–2 billion into private markets.

Staff will initially focus on affordable housing opportunities, as well as low-carbon solutions relating to energy, technology-enabled resource efficiency, water and waste management, land and agriculture management, and food security.



Priority
4

Enhance low-carbon stewardship activities

Why is this important? CalSTRS is a long-term, active owner and steward of capital. We engage hundreds of companies each year to promote sustainable business practices. We influence companies through proxy voting, authoring letters, attending meetings and conferences, and collaborating with other like-minded investors.



Progress update

CalSTRS is a leader in [Climate Action 100+](#), an investor initiative seeking to ensure that the world's largest greenhouse gas (GHG) emitters act on climate change. We have secured significant emission reduction commitments through the eight engagements that we lead, proving that investor engagement works.

Company	Region	Industry	GHG Emissions Commitment
Duke Energy	United States	Electric Utilities	Net Zero by 2050
Southern Company	United States	Electric Utilities	Net Zero by 2050
Dominion Energy	United States	Diversified Utilities	Net Zero by 2050
Phillips 66	United States	Oil & Gas Refining	Ongoing Engagement
Daikin Industries	Japan	A/C Manufacturing	Net Zero by 2050
ENEOS	Japan	Oil & Gas Refining	Net Zero by 2040
Nippon Steel	Japan	Steel Manufacturing	30% Reduction by 2030
Toray Industries	Japan	Textile Manufacturing	30% Intensity Reduction

In December 2020, we also pioneered a new engagement strategy called [activist stewardship](#), which is targeted and heightened engagement at a company where traditional engagement has failed to produce meaningful results.

The low-carbon transition is a [Stewardship Priority](#) for CalSTRS, and we are actively engaging companies to make them resilient in a low-carbon future. We expect companies to demonstrate their resilience to changing public policies, technological advancements and physical impacts associated with climate change.

Priority
5

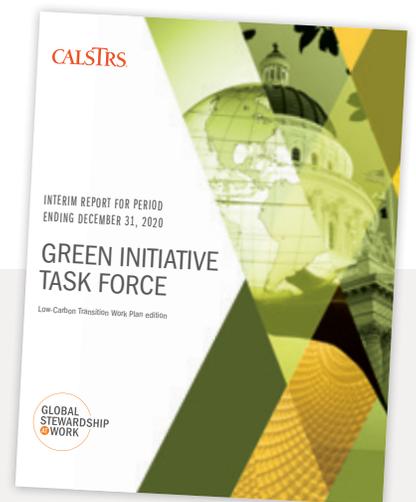
Communicating strategies

Why is this important? CalSTRS is committed to being transparent about our goals, ambitions, and activities to multiple audiences, including our beneficiaries, our partners and our global investment peers. We provide in-depth reports detailing our climate-related activities every three years.

Progress update

CalSTRS' 2019 Green Initiative Task Force Report was the first to be aligned with guidance from the Task Force on Climate-Related Financial Disclosures (TCFD).

The [2020 Green Initiative Task Force Report](#) is our first interim report. We will continue to publish regular updates on our [low-carbon transition](#) and [value of engagement](#) webpages.



MEMORANDUM

TO: Investment Committee, CalSTRS
FROM: Stephen McCourt, Allan Emkin, Mika Malone, Eric White, Meketa Investment Group
CC: Christopher Ailman
DATE: September 1, 2021
RE: CalSTRS Net Zero Pledge

At the July Investment Committee meeting, the Investment Committee approved the Investment Committee Work Plan, which included the evaluation of action steps towards a low carbon future. Staff also provided the Committee with additional information on a potential Net Zero pledge for the CalSTRS investment portfolio.

In this agenda item, Staff recommends that the Investment Committee adopt a Net Zero Pledge, and details a framework for the Net Zero Pledge. Staff is recommending that the Investment Committee adopt the following pledge:

CalSTRS recognizes the risks and opportunities presented by the foreseeable transition to a low-carbon economy, as well as the global acceleration toward alignment with the science-based emissions targets of the Paris Climate Agreement. In order to provide sustainable benefits to California's educators, CalSTRS is committed to achieving a net zero investment portfolio by 2050 or sooner.

Staff is recommending an implementation framework that is split into four categories:

- 1) **Pledge** to create a Net Zero emissions portfolio by 2050. This pledge would serve as a "North Star" as CalSTRS' investment portfolio evolves over the coming decades. It is a goal, a point of reference and, on its own, requires no specific actions.
- 2) Develop a **Plan** to implement the Net Zero commitment. This plan would build on the CalSTRS' significant efforts to migrate the portfolio toward a low carbon future, and would include detailed analysis of potential investment risk and return considerations and the ability to influence policy makers at all level (public and private),
- 3) **Proceed** with a set of actions for the next year. Staff envisions the actions falling into five key areas: internal governance structures, investment methodologies and frameworks, portfolio emissions measurement, interim goals, and communications.
- 4) **Publish** CalSTRS' progress toward the Net Zero goal.



September 1, 2021

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Staff includes several considerations for the Committee. First, Staff acknowledges that the goal of a Net Zero portfolio cannot be achieved without other important actors doing their part – investment partners, companies, policy makers, and future Investment Committees. Second, Staff acknowledges that implementing a Net Zero portfolio may result in more active management, wider risk budgets, modified benchmarking, and incentive compensation design changes, to align CalSTRS with the Net Zero goal. Third, Staff acknowledges that pursuing this goal will likely involve greater time and resources, including those to measure emissions, track progress, and diligence investment decisions. Finally, Staff acknowledges that, while current science points to a need for the global economy to be Net Zero emissions by 2050, scientific consensus may change in the future. CalSTRS will need to be prepared to adapt to quicker timeframes, if necessary.

Despite these challenges, Staff believes a Net Zero Pledge will allow CalSTRS to identify and take advantage of the many Net Zero-oriented investment opportunities that are emerging, and better adapt the portfolio to a foreseeable lower carbon future.

Conclusion

CalSTRS, for many years, has recognized the risks and opportunities presented by the foreseeable transition to a low-carbon economy, as well as the global acceleration toward alignment with the science-based emissions targets of the Paris Climate Agreement. This Net Zero Pledge would build on the significant efforts of CalSTRS over time.

We also note that CalSTRS' Investment Beliefs acknowledge the importance of considering the impact on the investment portfolio of a low carbon future. Specifically, Investment Belief 9 states:

Investment risks associated with climate change and the related economic transition—physical, policy and technology driven—materially impact the value of CalSTRS' investment portfolio.

The adoption of the Net Zero Pledge is a consistent and a logical extension of the broad range of research and actions taken by CalSTRS over the last decade. At this time there is no widely accepted “best practice” in managing portfolios toward Net Zero. We believe that best practices will evolve over time and staff and Meketa will bring those practices to your attention as they become available for your consideration. As such, Meketa concurs with the Staff's recommended pledge and implementation framework.

If you have questions, please feel free to contact us at (760) 795-3450.

SPM/AE/jls