



Investment Committee

Item Number 6 – Open Session

Subject: Net Zero Annual Strategy – Branch Wide Updates

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Item Type: Information

Date & Time: May 4, 2023 – 30 minutes

Attachment(s): Attachment 1 – Draft ‘Transition Tracker’ Prototype

PowerPoint(s): Net Zero Annual Strategy – Branch Wide Updates

Item Purpose

The purpose of this item is to provide Investment Committee members with additional information on progress that has occurred since the [September 2022 Investment Committee](#) meeting to advance the CalSTRS pledge to achieve net zero portfolio emissions by 2050 or sooner. It complements the previous Action items #4 and #5 (a) and (b).

Please refer to the complementary Action items which includes one recommendation relating to CalSTRS reducing portfolio emissions in Fixed Income portfolios and two policy change recommendations for Global Equity and Sustainable Investment and Stewardship Strategies (SISS) to facilitate a 20% allocation to a low-carbon target index, reducing emissions in public equity portfolios.

Executive Summary

As highlighted in the [September 2022 Investment Committee](#) meeting, staff has developed three core strategies for implementing the CalSTRS net zero portfolio emissions pledge: (1) measuring and reducing portfolio emissions, (2) increasing exposure to low-carbon investments that meet our risk-return goals, and (3) using our influence to accelerate the integration of net zero considerations across global financial markets. This item provides updates on staff activities, across the Investments Branch, supporting these three strategies.

(1) Measuring and Reducing Portfolio Emissions

- The public markets teams have focused on developing and implementing the emissions reduction recommendations detailed in Action items #4 and #5 (a) and (b).
- In addition, the four public markets units (Global Equity, Fixed Income, Sustainable Investment and Stewardship Strategies – SISS, Risk Mitigating Strategies – RMS) are conducting annual portfolio emissions measurement. Real Estate has also conducted its first measurement of a portion of its portfolio emissions.

(2) Increasing Exposure to Low-Carbon Investments

- The SISS Private Portfolio, which was approved in 2021 to create a systematic platform to expand investments in low-carbon solutions, has deployed over \$1.3 billion.
- The private asset classes have been trialing the integration of an internal classification system to better understand climate-related risks and to help identify and expand low-carbon opportunities.

(3) Using Our Influence to Accelerate the Net Zero Transition

- The SISS team provided an update during the [January 2023 Investment Committee](#) on CalSTRS stewardship activities, the primary means through which CalSTRS seeks to influence meaningful corporate and market activities to accelerate the global transition to a net zero economy.
- In addition, staff is seeking to use CalSTRS influence with partners and the broader financial markets to support our net zero pledge. Of note is how the RMS team has been working with external managers and hedge fund and quantitative analysis industry leaders to increase the understanding of net zero data and considerations in these market segments.

This item also provides brief updates on two additional activities supporting these priorities:

- Developing a prototype ‘**Transition Tracker**’ to better understand the degree to which the broader, global net zero transition is occurring.
- Providing **education** to staff on the investment implications of the net zero transition.

Background

(1) Measuring and Reducing Portfolio Emissions

CalSTRS commitment to achieving net zero portfolio emissions by 2050 or sooner requires periodic measurement of the carbon emissions financed by our investment portfolio as a means of understanding overall emissions and what is driving them. Staff conducted initial public markets measurements last year and presented them to the Investment Committee at the May 2022 Investment Committee meeting. An update on the public markets measurement process is

provided below and is supplemented by initial calculations from the Real Estate unit, for a portion of its portfolio.

Public Markets Emissions Measurement Update:

Staff started the second measurement of CalSTRS public markets securities using data values as of December 31, 2022. As staff has indicated to the Committee in previous meetings, there remain some significant data and calculation challenges in this evolving field. Staff's extensive discussions with global investor peers and partners have corroborated this issue. Staff is currently not comfortable with the integrity of the data and is actively working with data providers to address our concerns. As soon as the data issues have been resolved (in the meantime, staff are happy to answer any follow-up questions relating to the current challenges), staff will share the updated annual emissions numbers with the Committee.

Initial Real Estate Emissions Measurement:

Staff has met with public pension plan peers and with leading Real Estate managers and service firms, seeking advice and best practice recommendations on how to measure the carbon footprint of the property investments in our diverse Real Estate portfolio. From these numerous conversations, staff determined that the most efficient way to obtain carbon emissions data on Real Estate properties is by partnering with [GRESB](#), a leading provider of environmental, social and governance (ESG) performance data and peer benchmarks. Real Estate investors, like CalSTRS, are using the GRESB platform to assess climate change risks and opportunities.

In 2022, staff requested that fifteen separate account/joint venture managers that oversee most of Real Estate's operating assets submit emissions-related property data to GRESB for full year 2021. The resulting data was compiled and analyzed through a joint effort between staff and an external environmental consultant. The data covers approximately 380 assets with a combined gross net asset value of \$23.4 billion, representing 55% of the total Real Estate portfolio value¹. The following assumptions were made to determine an initial estimate of the carbon footprint of total portfolio operating assets:

- 119 properties were submitted to GRESB with asset-level emissions data. Actual property-level data for scope 1 and scope 2 carbon emissions was used for these assets.
 - Carbon emissions intensities for each asset were calculated based upon intensity per square foot.
 - The average 'per square foot' intensities for each property sector, such as office or apartments was calculated.
- For properties that did not have asset-level emissions data, emissions were estimated by applying the average 'per square foot' intensities for the appropriate property sector.

¹ The Real Estate portfolio consists of existing and substantially occupied "operating assets" (approximately 55% of the portfolio) as well as properties that are under development and non-control investments such as commingled funds.

The preliminary estimate of scope 1 and scope 2 emissions for calendar year 2021 was 157,150 metric tons. This results in an estimated intensity of 6.7 tons per million dollars of net asset value.

Next Steps: The Real Estate team and its ESG consultant have commenced GRESB data collection efforts for 2023. Staff is encouraging our managers/partners to increase their efforts to obtain better data coverage on carbon emissions. Staff is also expanding efforts to collect emissions data on non-control commingled fund investments.

(2) Increasing Exposure to Low-Carbon Investments

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. Increasing exposure to low-carbon investments is therefore the second core component of the CalSTRS net zero pledge. Staff is actively seeking opportunities, particularly within the private markets, that are additive to our risk and return goals and provide climate solutions to the global economy.

SISS Private Portfolio:

The [SISS Private Portfolio was approved in 2021](#) to provide a systematic platform to serve as a source of long-term capital appreciation and opportunistically increase CalSTRS exposure to low-carbon solutions that are additive to the Total Fund.

During 2021 and 2022, the SISS team conducted a comprehensive mapping of the private markets low-carbon solutions landscape. This research effort included meetings with over 200 global organizations (peers, managers, consultants, companies) and commissioning a research report from an external investment consultant that analyzed low-carbon solution investments on a year-by-year basis from 2004–2020. Staff identified three broad risk and return profiles of interest:

- Opportunistic Climate Infrastructure investments: targeting 10 – 15% net IRR (internal rate of return)
- Hybrid/Innovative Climate investments: targeting 15 – 25% net IRR
- Venture Capital and Growth Equity investments: targeting +25% net IRR

In the last year, the SISS Private Portfolio deployed over \$1.3 billion with inaugural investments in each of the three broad risk and return profiles. Examples of the types of investments include:

Case study #1: A \$350 million commitment to a strategy supporting the decarbonization of the U.S. energy market. Specific investments scale renewable power capacity across multiple states and provide cost-effective energy efficiency solutions for industrial processes. The strategy has a target net IRR of 11% and a net Multiple of Invested Capital (MOIC) of 1.3x.

Case study #2: A \$60 million commitment to a late-stage venture/growth-equity strategy that provides technology-enabled low-carbon solutions. Specific early investments include a digital platform enabling more residential and utility customers to access renewable power and a food company making alternative meat protein from mushrooms with significant carbon and water savings as well as dietary health benefits. The strategy has a target net IRR of 25% and a net MOIC of 2.5x.

Next Steps: Staff intends to grow CalSTRS exposure to private low-carbon solutions contingent on the [Asset Liability Management Study](#) (ALM) and the Investment Committee’s strategic asset allocation decision. Meketa will continue to provide the Investment Committee with enhanced monitoring as staff expands the SISS Private Portfolio allocation. (Please refer to Meketa’s latest SISS Portfolio Enhanced Monitoring Oversight report presented at the March 2023 Investment Committee Closed Session).

Internal Classification System for Private Markets:

As in the public markets, staff continues to find it challenging both to measure emissions exposures across a diverse set of private market assets and to determine a sufficiently nuanced, yet comprehensive way of identifying investments across asset classes that either enable, or support, the transition to a net zero economy. While a few external classification methods exist, they are generally very complex and would be extremely difficult to apply in a practical manner to the CalSTRS Investment Portfolio.

Staff believes that the best way to assess current carbon exposures across different private asset classes and investment structures is to apply an internal classification framework for (1) investments that are ‘green’ or low-carbon, (2) investments that are transitioning to green (staff has applied the term ‘olive’ to these investments), and (3) investments that are high carbon and not likely to transition meaningfully, or where their transition trajectory is hard to evaluate (staff has applied the term ‘grey’ to these investments). Staff refers to this as our internal ‘Green-Olive-Grey (GOG) Framework.’

Recognizing that one set of metrics would be difficult to apply across different asset types, the Green-Olive-Grey (GOG) Framework allows each asset class to identify and apply asset class-specific metrics to help judge whether an existing or potential investment is considered low-carbon (green), transitioning (olive) or high-carbon/unclear (grey).

Staff is focused on developing the ‘GOG Framework’ in private markets as this is where staff believes there are the best opportunities to capture and expand low-carbon investments that meet our risk and return objectives. Brief progress updates from each private asset class follow:

Real Estate:

In developing a GOG Framework, the Real Estate team is testing a unique, tiered classification system for directly owned Real Estate assets. Assets were classified based on meeting the following tests:

	Green	Olive	Grey
1. EnergyStar Score	Score of 76 or higher (top quartile)	Score of 26-75 or higher (middle two quartiles)	Score of 25 or lower (bottom quartile)
<i>OR</i>			
2. GHG Emissions Intensity	Beats GRESB average intensity by 10% or more	No more than 150% of GRESB average intensity	More than 150% of GRESB average intensity
<i>OR</i>			
3. Building Certifications	LEED certified (any status/age) or similar (BREEAM Very Good, etc)	Manager states building meets LEED standards	N/A
<i>OR</i>			
4. Building Age (Year Built)	Completed 2017-2022	Completed 2000-2016	Pre-2000

Test 1: If a property received an EnergyStar score of 76 or higher², it was classified as ‘Green’, while lower scoring properties were ranked as ‘Olive’ or ‘Grey’ according to the scores described in the preceding table.

Tests 2 and 3: If an EnergyStar score was not available, assets were classified on their greenhouse gas (‘GHG’) intensity, relative to average intensity data derived by analysis of GRESB data for various property sectors. In certain instances where neither GHG intensity nor EnergyStar score were available, staff reviewed building certifications such as LEED and BREEAM to determine if a ‘Green’ or ‘Olive’ score was warranted.

Test 4: Building age was used in instances where information could not be obtained to classify an asset based on the first three tests. Based on discussions with staff’s ESG consultant and other real estate practitioners and recognizing that the newer the building, the more energy efficient it is, staff determined that buildings built between 2017-2022 should be considered ‘Green’ those built between 2000-2016 should be considered ‘Olive’ and those built before 2000 should be ‘Grey.’ Staff acknowledges that building age is an imperfect metric and believes that as data collection improves this test will not be necessary.

Results: This initial analysis considered approximately 380 properties representing 55% of the total Real Estate portfolio and resulted in the properties being classified as: 48% ‘Green’, 30% ‘Olive’, and 22% ‘Grey’.

² An EnergyStar score shows the relative ranking of a property to national peers within that property sector. For example, an office building scoring 76 means that it has a superior energy-usage profile than 75% of all office buildings in the United States.

Next Steps: Efforts are being made for every direct asset to provide property information to both EnergyStar and GRESB which will result in better data coverage and more accurate emissions measurement. Going forward, staff will also be refining our application of the GOG Framework and looking to test its ability to enhance our portfolio management process.

Inflation Sensitive:

In developing a GOG Framework, Inflation Sensitive is focusing on infrastructure co-investment and account investments as more data is readily available for these assets. As of 09/30/22, infrastructure co-investments and accounts represent approximately 68% of the total infrastructure portfolio (or about \$5.9 billion of the total \$8.8 billion). Infrastructure is approximately 51% of the total Inflation Sensitive portfolio (or about \$8.8 billion of the total \$17 billion).

Inflation Sensitive applied the GOG Framework at the asset/manager level and considered 1) whether the manager/firm had committed to net zero emissions and/or 2) whether the asset/portfolio company manager had committed. Staff concluded that most assets are classified as 'Olive' as most managers are working towards a Grey-to-Green transition. On a NAV basis, as of 09/30/22, staff concluded approximately 15% of assets were classified as 'Green', 84% as 'Olive' and only 1% was considered 'Grey.'

Next Steps: Although the GOG classification process is new, staff will continue to seek ways to improve the application of this framework to portfolio investments. Staff will also continue to engage with partners to better understand their net zero commitments and targets as well as which tools and frameworks are being used to help identify, manage and report on climate change risk management efforts.

Private Equity:

Measuring carbon emissions in the Private Equity portfolio is particularly challenging. The portfolio is made up of over 4000 underlying minority interests that are managed by over 200 asset managers held in over 300 partnerships. These underlying holdings are churned frequently with an average half-life under 3 years. With respect to measuring and reporting on carbon emissions, the industry is evolving rapidly but lags other asset classes and is likely to do so for the foreseeable future.

Some of the portfolio's underlying holdings involve companies that are quite large and that tend to conform to public company best practices, including carbon measurement and disclosure. As such, large private equity firms are leading the way in the industry, as one might expect. However, the majority of the underlying holdings involve relatively small companies held by small- and mid-size asset managers with more modest resources where industry sector best practices and standards are far less developed with respect to carbon emissions.

Additional complexity derives from the breadth and diversity of Private Equity’s holdings and the aforementioned churn factor. Investments in improved companies are soon sold and recycled for other companies that are, on average, likely to be less improved and perhaps more carbon intensive. This continuous cycle of selling “improved” companies and buying less-improved companies is likely to result in somewhat misleading results if one simply measures carbon emissions without taking into account past and ongoing emission reductions as well as adjustments for revenue and unit growth, market share increases, etc.

Given the above factors and given that most private equity asset managers are only in the early stages of dedicating resources to the task of carbon emissions accounting, Staff is endeavoring to analyze its portfolio, and for the time being, evaluate its managers based on the degree to which each is accounting for carbon emissions. In the near- to medium-term, after Staff has gained a deeper understanding of how carbon accounting is being done and the degree of uniformity therein, Staff will modify the evaluation process to focus not only on the existence of carbon accounting, but also the degree of carbon emission reductions being effectuated.

In summary, Private Equity is applying the Green-Olive-Gray (GOG) framework at the general partner level and determining what percentage of general partners are actively measuring carbon emissions across their underlying portfolio. ‘Green’ is being applied when measurement and reporting initiatives are in progress, ‘Olive’ is being applied when a general partner has committed to measuring emissions and is actively and materially working towards that goal, and ‘Grey’ is being applied when the general partner does not yet have a plan regarding emissions measurement.

Next Steps: Private Equity is continuing to survey its general partners to determine classification status and to get more information around carbon emissions measurement and reporting timelines while also engaging with its larger general partners to learn more about their practices, many of which will presumably become more widely adopted within the industry and eventually become accepted as industry “best practices.”

Additionally, Private Equity will continue to work with various organizations focused on carbon measurement and reduction in the private equity industry including the Institutional Limited Partners Association (ILPA) which is focused on a broad array of limited partner issues including carbon reporting and the ESG Data Convergence Initiative (EDCI) which is working towards standardized ESG reporting in the private equity industry including Green House Gas (GHG) emissions (Scope 1 and 2 and optionally Scope 3) and renewable energy usage.

(3) Using Our Influence to Accelerate the Net Zero Transition

CalSTRS recognizes that meaningful progress towards our net zero goals will not happen unless the global financial markets are also demonstrating meaningful progress towards integrating net zero considerations. To influence this shift, CalSTRS engages portfolio companies to better manage carbon emissions and climate risks (both ourselves and as part of global coalitions),

engages regulators to enhance net zero disclosures and collaborates with external fund managers and industry associations to integrate net zero considerations into portfolio management.

Risk Mitigating Strategies (RMS):

One of the most challenging market segments to integrate net zero considerations is Risk Mitigation Strategies (RMS). Regardless, staff has been focused on using CalSTRS influence to shift market understanding and practice.

Over the past year, the RMS team has engaged more than two dozen investment managers focused on hedge fund and quantitative strategies about CalSTRS net zero pledge. These include both current managers in the RMS portfolio and managers that RMS has not invested with but are considered thought leaders in understanding climate-related risks and opportunities. A common theme from the conversations is that measuring and managing portfolio carbon exposure of RMS strategies is still in its infancy. Consistent and comprehensive data and measurement methodologies for investment instruments, such as derivatives, leveraged positions, and short positions, have yet to be identified. Further, the frequency with which positions may be traded makes emissions measurement challenging, and in many cases, of limited value.

Next Steps: During the second half of last year, RMS engaged an external consultant to develop a manager engagement framework to help staff better understand and assess managers' efforts in this area. The framework consists of specific questions that help RMS understand the extent and quality of climate integration into corporate policies, risk management, investment processes, and reporting. It also provides guidance on how responses should be evaluated. RMS is currently working on incorporating this framework into its due diligence process and regular conversations with managers. Staff is also developing a systematic evaluation framework to score and rank managers on net zero-related criteria.

Additional Supporting Activities

Net Zero 'Transition Tracker':

During the [September 2022 Investment Committee meeting](#), staff recommended, and the Investment Committee approved, the adoption of a net zero investment decision making process. As a component of this decision-making process, staff recognized the importance of developing methods to 'track' the speed and direction of the broader global net zero transition to inform appropriate actions and pacing. Specifically, the need to map, organize and make relevant, the multiple, disparate data points that currently exist to signal the speed and direction of the transition. Staff refer to this concept internally as a 'Transition Tracker'.

To inform how best to address this challenge, staff has:

- Surveyed and identified over 150 sources of data to see if any comprehensive net zero 'tracking' system exists.

- Spoken extensively with global peers and external managers on if/how they are considering or evaluating broad net zero transition changes.
- Established a set of major themes to start to track possible indicators that impact/influence the global economy's transition to net zero organized into:
 - Physical Risk: e.g. temperature change, extreme weather events
 - Transition Risk – Policy-related: e.g. country and regional based climate commitments
 - Transition Risk – Technology-related: e.g. levelized costs of energy, electric vehicle penetration
 - Carbon Emissions: e.g. increases and reductions in global emissions
- Created a 'heatmap strawman' for a prototype 'Transition Tracker' to test whether it could be informative for staff and the Investment Committee – and expanded/enhanced over time.

Staff's analysis indicates that while no viable 'Transition Tracker' exists for institutional investors like CalSTRS, it is a concept that resonated in all of staff's mapping discussions, so is worth exploring further, both internally, and with partners.

Next Steps: Attachment 1 is an initial draft of a 'Transition Tracker' prototype. Staff envisage that this 'heatmap' format, similar to economic data heatmap charts, may be the most helpful starting point to receive feedback on the concept. The prototype is by no means comprehensive or complete, it is a merely strawman for extensive follow-up discussion, testing and refinement. Most importantly, staff hopes to be able to assess how such information could be used and improved by the Investment Branch, our external partners and the Investment Committee in effectively implementing CalSTRS net zero strategies.

Net Zero Education Program:

The global net zero transition is continuously, and in many areas rapidly, evolving. It is also a relatively new topic for many investment professionals, compared to traditional financial analysis. Emissions measurement methodologies, policy responses to climate change, technological advances around clean energy delivery and the physical impacts associated with climate change are both complex and dynamic. Staff recognizes the importance of establishing effective ways to help train and support the Investment Branch and the Investment Committee's understanding of the different facets of the net zero transition.

To date: the CIO has led two mandatory net zero training sessions during all staff 'anchor' days; Investment Branch staff have completed a survey indicating their preferences for net zero-related training topics and the best methods for delivery; staff has hosted external expert webinars covering topics including the hydrogen economy and the changing climate policy landscape; and staff continues to speak with global peers and partners to share ideas on how they are identifying and providing educational opportunities to their staff.

Next Steps: Staff intends to provide multiple education/training sessions for the Investment Branch in the months ahead, considering staff survey feedback.

Strategic Plan Linkage:

One of the five objectives of the current CalSTRS Strategic Plan is to operationalize sustainable investment beliefs to create long-term value. A three-year progress indicator is that CalSTRS defines appropriate portfolio carbon measurements and sets interim emission reduction targets that meet the Fund’s risk-return profile.

Board Policy Linkage:

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 2 Board Governance, item 4, Strategic Planning Policy, page 17. The CalSTRS net zero emissions pledge by 2050 or sooner, and the accompanying timeline and activities are 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.
