

## Attachment 1: Public Markets Emissions Measurement Process

### *Calculating Portfolio Emissions*

CalSTRS calculates its share of a publicly traded company’s emissions based on our percentage ownership of that company. For example, if CalSTRS owns one percent of a company, we assign one percent of that company’s total emissions to our portfolio footprint. We perform this exercise for each company in our portfolio and then aggregate individual company emissions into a total portfolio footprint. The following table provides a simplified example of how carbon emissions are calculated in a portfolio.

#### Calculating Portfolio Carbon Emissions

Company in Portfolio	Enterprise Value of Company	Company Total Scope 1 and 2 Emissions	Amount of Company Held in Portfolio	Company Emissions Assigned to Portfolio	
ABC	\$5B	250,000 tons CO <sub>2</sub> e	\$100M	$(\$100M/\$5B) \times 250,000$ tons	5,000 tons CO <sub>2</sub> e
DEF	\$7.5B	400,000 tons CO <sub>2</sub> e	\$175M	$(\$175M/\$7.5B) \times 400,000$ tons	9,333 tons CO <sub>2</sub> e
GHI	\$6B	500,000 tons CO <sub>2</sub> e	\$80M	$(\$80M/\$6B) \times 500,000$ tons	6,667 tons CO <sub>2</sub> e
JKL	\$10B	200,000 tons CO <sub>2</sub> e	\$200M	$(\$200M/\$10B) \times 200,000$ tons	4,000 tons CO <sub>2</sub> e
MNO	\$4B	150,000 tons CO <sub>2</sub> e	\$125M	$(\$125M/\$4B) \times 150,000$ tons	4,688 tons CO <sub>2</sub> e
<b>Total Portfolio Value</b>			<b>\$680M</b>	<b>Total Portfolio Carbon Emissions</b>	<b>29,688 tons CO<sub>2</sub>e</b>

As shown above, company ABC has 250,000 total tons of scope 1 and scope 2 carbon emissions and has an enterprise value of \$5 billion. An investor holds \$100M worth of company ABC in its portfolio, which represents 2 percent ( $\$100M/\$5B$ ) of the company’s enterprise value. The amount of carbon emissions attributable to the investment portfolio, from its partial ownership of company ABC, is therefore 5000 tons of CO<sub>2</sub>e (250,000 tons x 2 percent). This process is repeated for the other companies in the portfolio to determine those percentage contributions to total carbon emissions. Finally, the individual company contributions are added up to get total portfolio emissions, which in this simplified example is 29,688 tons of CO<sub>2</sub>e.

### *Challenges Calculating Emissions*

While the process to attribute emissions might seem straightforward, determining our ownership relative to a company’s total value has proven challenging. CalSTRS’ ownership levels are calculated at calendar year end using information provided by our custodian, State Street Bank. They provide us the market value of our equity shares and debt holdings for each publicly traded company we own. We then rely on a third-party data service provider to give us the total equity and debt value for each company we own, as of the same valuation date. Using the method

described above, we determine our percentage ownership of each company and multiply that percentage by the company's total disclosed carbon emissions.

During the 2022 emissions measurement process, staff discovered that the equity and debt values provided did not align with CalSTRS' portfolio market values provided by State Street Bank. Further analysis showed that while we can get timely year-end values from our custodian, our data service provider was relying on companies to provide their year-end debt and equity values and these disclosures were being provided at varying points in time throughout the following year. This mismatch in the timing of equity and debt valuation disclosure was strongly influencing emissions calculations and yielding inaccurate results.

Staff engaged with multiple data service platforms and providers, consulted with numerous investment peers and partners, and tested several combinations of emissions data sources and emissions measurement platforms. Staff concluded that presently there is no feasible work around to the corporate emissions data disclosure lag and that the best course of action is to lag our emissions disclosure by one year to ensure there is not timing mismatch and inaccuracies. For this year's disclosure, staff is providing public market emissions for 2021 and 2022, along with a year-over-year comparison. Rather than disclosing 2023 emissions this year, staff will provide 2023 emissions in our 2025 update. Going forward, considering the recent SEC climate disclosure rule and the growing acceptance of the International Sustainability Standards Board's (ISSB) climate disclosure guidance, staff anticipates more robust and timely corporate emissions disclosure that will result in more meaningful emissions measurement.

### ***What to Measure***

**Public Markets:** CalSTRS continues to focus on measuring emissions in public markets securities. CalSTRS public markets investments represent most of the assets in the CalSTRS Investment Portfolio. Due to our long-standing and ongoing engagement efforts to encourage company disclosure on carbon emissions, many public markets companies have been providing climate-oriented data to investors for many years and multiple data service providers have developed corporate carbon footprint models that allow for a reasonably accurate assessment of public company emissions, even with estimations.

**Security Coverage:** Prior to conducting our initial carbon emissions measurement in 2022, staff collectively determined which securities to include in the process and which emissions metrics to use. Staff continues to believe the following securities are currently not appropriate for emissions measurement:

- **Derivatives:** Staff felt it was most reasonable to focus on long-only securities, where the emissions exposure is easiest to determine and understand. Staff decided not to include derivative-type securities where accounting for emissions is still very unclear and without established standards or best practices.
- **Sovereign debt:** Though a significant part of the Fixed Income portfolio, the methodology to measure emissions in sovereign debt is still being debated and no widely accepted means

of determining how to allocate a country's carbon emissions, based on its debt issuance, currently exists.

**Emissions Scope:** Staff continues to believe measuring scope 1 emissions (direct emissions through burning fossil fuels) and scope 2 emissions (fossil fuel-based energy use) of underlying company investments are appropriate choices. Our on-going review of other net zero portfolio commitments continues to show that most investors that have made a net zero pledge have committed to measuring and managing only scope 1 and scope 2 emissions in their portfolio. The current market consensus is that the methods of accounting for scope 3 emissions (emissions within a company's supply chain and emissions associated with the use of a company's products) are still under debate, and any emissions data produced would likely not be reliable or useful for decision making.

**Metrics:** Since absolute emissions are the focus of the CalSTRS net zero pledge, staff believes that is the appropriate metric to use when reporting emissions. While a normalized emissions metric (emissions per unit of investment) allows for the comparison of portfolios of different sizes and different securities, staff believes these metrics are too influenced by market movements to provide meaningful data. Staff continues to consider other carbon emissions metrics, including intensity metrics such as emissions per unit of sales or revenue. However, staff believes that such metrics are more appropriate for the granular analysis to be conducted later in the implementation plan when staff begins doing sector and security level analysis.

**Timing:** Staff initially chose December 31 as an annual point in time to measure our portfolio emissions and continues to believe that December 31 is the most appropriate date.

### *How to Measure*

As part of the public markets emissions measurement analysis conducted over the past year, staff collectively researched multiple data providers, measurement platforms and methodologies, finding that some were more suited for measuring emissions in equity securities and others better suited for measuring debt securities emissions. While staff had intended to find a single platform for measurement that could be used across units, the research led staff to conclude that it would be best for Global Equity and Fixed Income to use different platforms that best suited each unit's needs and aligned with their emission reduction strategies.

Global Equity is using FactSet to conduct their emissions measurement. FactSet is their portfolio performance and risk management platform and using FactSet allows Global Equity staff to integrate carbon emissions measurement into their existing portfolio management process. However, FactSet is an equity-oriented platform and not suited for debt securities. That led Fixed Income to look at alternative measurement options, ultimately choosing Aladdin as their measurement platform. Fixed Income uses Aladdin to manage their portfolio risk and performance so using Aladdin allows their emissions measurement to be integrated within their existing portfolio management process. It should be noted that both platforms utilize the same underlying source for company carbon emission data: MSCI.