Report on Global Equity Portfolio Carbon Footprint – Montreal Pledge

Anne Simpson & Divya Mankikar

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Today's Objectives

- Update the Investment Committee on work to fulfill the UN Principles of Responsible Investment (UN PRI) Montreal Pledge to map our carbon footprint in advance of its public launch on December 1, 2015
- Put the work in context of the CalPERS Climate Change Strategy
- Explain the project scope, methodology developed and data constraints
- Present initial findings
- Next steps

The Montreal Pledge

- The Pledge was launched on September 25, 2014 at PRI in Person in Montreal.
- By signing the Pledge, investors commit to measure and publicly disclose the carbon footprint of their investment portfolios annually
  - “The purpose of a carbon footprint is to better understand, quantify and manage the carbon and climate change related impacts, risks and opportunities in our investments.”
- CalPERS was the first U.S. signatory to the Montreal Pledge.

The Montreal Pledge Signatories

Over 100 signatories representing just over $8 trillion in AUM as of October 13, 2015. Other asset owners and fund managers include:

AXA Investment Managers	$765 Bn
HSBC Global Asset Management	$493 Bn
apg All Pensions Group	$439 Bn
PGGM	$207 Bn
University of California	$91 Bn

USS Universities Superannuation Scheme Limited	$54 Bn
Hermes Investment Management	$44 Bn
Första AP-Fonden	$34 Bn
RPMI Railpen	$32 Bn
HESTA An Industry SuperFund	$22 Bn

The Role of the Montreal Pledge

To begin to integrate quantitative measurement into sustainable investment strategy

CalPERS Investment Beliefs

Investment Belief 2: A long time investment horizon is a responsibility and an advantage.

Investment Belief 4: Long-term value creation requires effective management of three forms of capital: financial, physical and human, including:

- Climate change and natural resource availability

Investment Belief 7: CalPERS will take risk only where we have a strong belief we will be rewarded for it.

Investment Belief 9: Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error.

- For example climate change and natural resource availability

UN Principles for Responsible Investment

Principle 2: We will be active owners and incorporate ESG issues into our ownership policies and practices. (For equities*)

Principle 3: We will seek appropriate disclosure on ESG issues by the entities in which we invest.

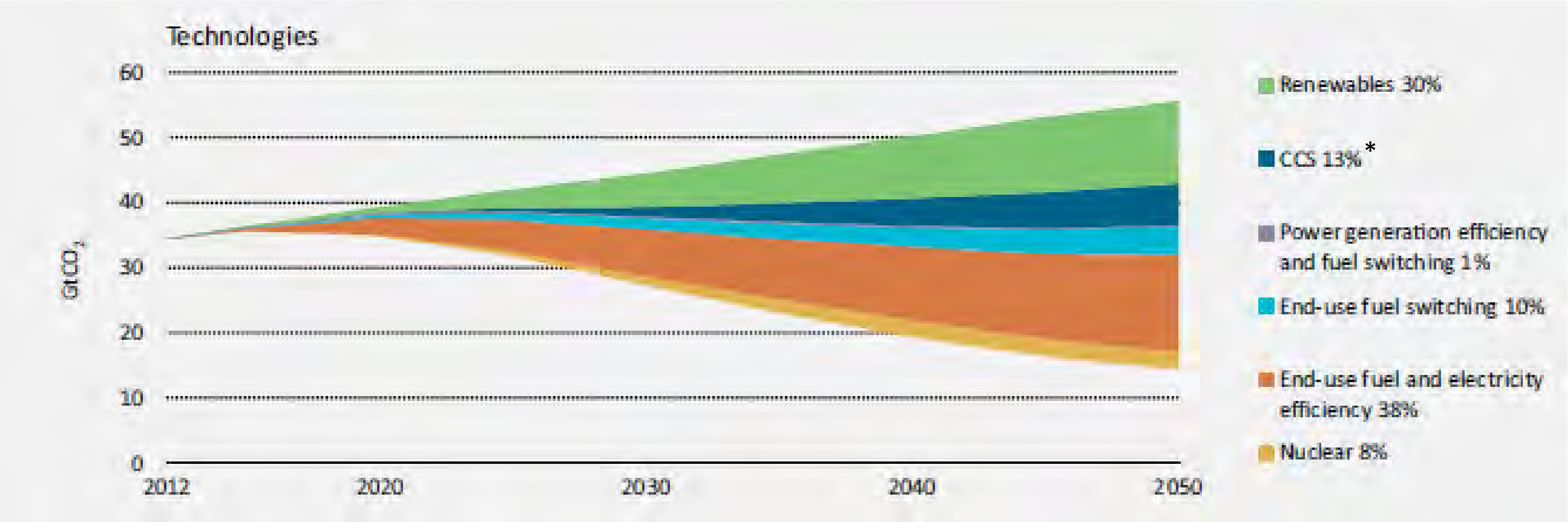
Global Governance Principles

A. CalPERS believes that environmental, social and corporate governance (ESG) issues can affect the performance of investment portfolios (to varying degrees across companies, sectors, regions, and asset classes through time).

Modeling Climate Change

The Transition to Low Carbon Energy

The chart below shows the contribution of key clean energy technology sectors to global cumulative CO_2 reductions between business as usual and the path to achieve a 2° global warming target.



Source: Energy Technology Perspectives 2015, International Energy Agency.
*CCS is Carbon Capture and Storage.

CalPERS' Strategy on Climate Change

INVO Roadmap: "Integrate Investment Beliefs and environmental, social, and governance (ESG) risk considerations within and across all investment programs."
A key area of focus is climate risk, which CalPERS takes action on in three important ways:

Engagement

Engage companies individually and through partnerships (Ceres, PRI) to support director accountability, file shareholder proposals, meet with executives and Boards

Take the debate further into risk management reporting, compensation, return on capital, and board quality and diversity

Advocacy

Continue advocating for a carbon price and ending fossil fuel subsidies in run up to Conference of the Parties (COP 21) in Paris via investor networks

Support regulations that address climate change, such as the EPA regulations on emissions and SEC rules on risk reporting

Integration

Develop manager expectations on sustainable investment; pilot for total fund underway

PRI Montréal PLEDGE

Perform a carbon footprint analysis for global equities

What is a carbon footprint?

A portfolio carbon footprint is the sum of greenhouse gas emissions, measured in tonnes of carbon equivalent allocated from each constituent company in proportion to ownership.

CalPERS' portfolio companies generate carbon emissions as:

1. Direct Impact (Scope 1)
2. Purchased Electricity (Scope 2)
3. Supply Chain and Product in Use Impacts (Scope 3)

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Equity portfolio carbon footprint =
a measurement of investment holdings' carbon impact attributable to CalPERS equity ownership

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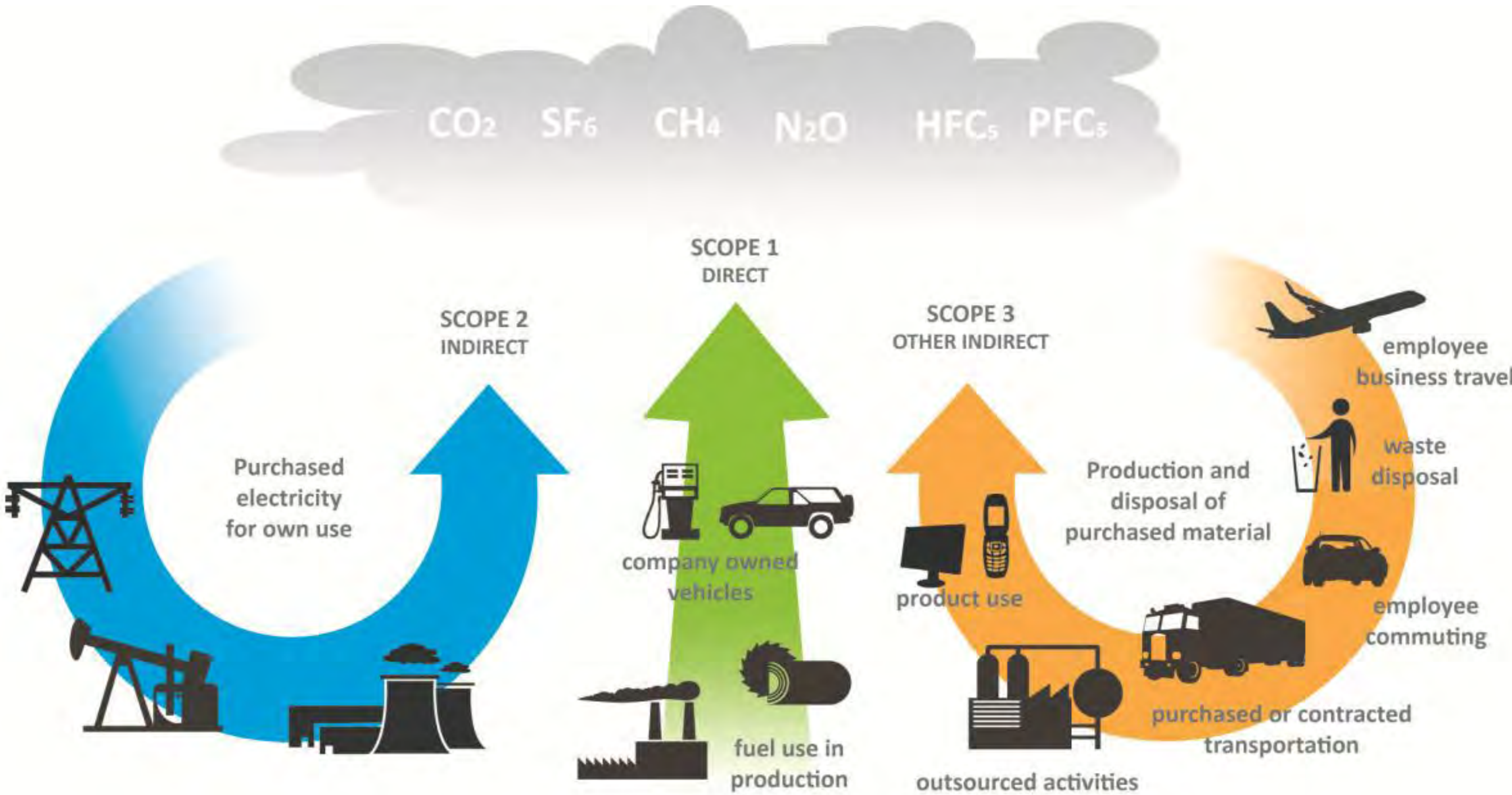
Working with AARM, GE and external data providers in the field of carbon footprinting, CalPERS can estimate exposure to carbon.

Example of a Corporate Carbon Footprint



Source: Greenhouse Gas Protocol

Carbon Footprint Project Methodology

To fulfill the Montreal Pledge we assessed the public equities asset class, working with AARM, GE and three external providers.

- Scope of holdings analyzed: Public Employees' Retirement Fund Global Equity holdings
  - Common stock, common stock units, preferred stock and depository receipts

- Date of holdings analyzed: June 30, 2015

- All three providers estimated over 97% of the PERF public equity U.S.dollar value
  - Methodologies vary between the three providers as to which types of assets they can measure, how they capture and scrub reported data, as well as how they estimate for companies that do not disclose.

- The estimated baseline carbon footprint covers Scopes 1 + 2 (Direct Emissions and Purchased Electricity) based on data availabilityand extrapolation.

Methodology and Data Constraints

- 30% of firms by portfolio value do not report, so data for these companies is estimated.
- Including multiple direct and purchased electricity emissions may result in double-counting, but providers currently lack access to data from companies to measure the overlap.
- Footprint will change in non-linear ways in the future as:
  - Methodology changes - Currently there is no globally agreed upon portfolio measurement standard or estimation model for companies that do not disclose.
  - Regulation of high-carbon industry is introduced or expands in scope, for example from COP 21.
- The Carbon Footprint is one component of climate risk
  - Physical climate risk is also important – for example, the economic impacts of drought on food and beverage, apparel, mining and utilities firms, and of sea level rise on real estate.

Initial Findings

Carbon Footprint*	south pole group	TRUCOST	MSCI ESG Research
Scope 1 + 2 Emissions (Direct Emissions and Purchased Electricity in Tonnes of Carbon)	29,680,614	30,876,777	35,083,813
Scope 1 + 2 Emissions per $ Million revenue	258.2	250	258.9

*The table above details the carbon footprint numbers at the aggregate PERF level for public equity holdings as of 6/30/15.

Annual revenue figures of the GE Portfolio for 2014 in $ Million were $118,722 (South Pole), $119,586 (Trucost) and $135,511(MSCI) .

Engaging with companies on emissions disclosure and management

The analysis has given CalPERS insights into priority firms to engage with and how portfolio firms are managing their carbon emissions.

- 80 companies out of 10,000 holdings account for 50% of the carbon emissions.

The top 80 carbon emitters fall into these sectors:	Basic Resources	Chemicals	Construction & Materials	Food & Beverage
	Industrial Goods & Services	Oil & Gas	Travel & Leisure	Utilities

- 33% by value of CalPERS holdings have absolute GHG reduction targets, publicly reported to the CDP.
  - Some of these are among the top 10 carbon emitters.
- The total carbon emissions reduction pledged by these companies would reduce CalPERS public equity emissions by 6%.

Source: Trucost

Next Steps

1. File with the PRI - We will also repeat the carbon footprint annually in keeping with Montreal Pledge commitment.

2. PRI publishes in advance of the COP 21 climate negotiations in December

3. Discuss potential next steps at ESG strategy Board offsite workshop in January 2016
   – Assess overlap of top carbon contributors to CalPERS footprint with CERES-led Carbon Asset Risk Initiative to refresh corporate engagement priorities
   – Track carbon reduction commitments made by portfolio firms, with emphasis on sectors for which carbon is material
   – Research carbon intensive sectors for risks and climate solution providers for opportunities consistent with the transition to a low carbon global economy