

Sustainable Investment and the Path to Net Zero

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Overview

1. Climate Change as Investment Risk and Opportunity
2. Taskforce on Climate-related Financial Disclosure Framework (TCFD) and UN Net Zero Asset Owner Alliance
3. Governance
4. Strategy
 - COP 26 The Glasgow Climate Pact
 - Renewable Assets Exposure
5. Risk Management
 - Real Economy Emissions
 - Stranded Assets Exposure
6. Metrics and Targets
7. Summary and Next Steps

1. Climate Change as Investment Risk and Opportunity



Investment
Returns



Employer
Affordability



Climate
Change

1. Climate Change as Investment Risk and Opportunity

White House Report on the Impact of Climate Change

“The climate crisis is reshaping our world, as the Earth’s climate is now changing faster than at any point in the history of modern civilization...When combined with physical, social, economic, and/or environmental vulnerabilities, climate change can undermine food, water, and economic security. Secondary effects of climate change can include displacement, loss of livelihoods, weakened governments, and in some cases political instability and conflict.”

[White House Report, October 2021](#)

2. Taskforce on Climate-related Financial Disclosure Framework (TCFD)



[TCFD 2021 Status Report](#)

1,600+ Companies report on TCFD recommendations

120+ National and international standards setters and regulators propose rule making reflecting TCFD recommendations

1,000+ Financial institutions responsible for \$194 Trillion in assets under management (AUM). CalPERS was an early supporter

2. United Nations Net Zero Asset Owner Alliance (UN NZAOA)

- CalPERS joined in 2019 as a founding member and member of the steering committee
- Alliance has grown to 66 members with more than \$10 Trillion AUM

UN AOA Commitments

- Transition investment portfolios to net-zero Greenhouse Gas (GHG) emissions by 2050 consistent with 1.5°C above pre-industrial levels
- Establish intermediate targets every five years
- Report on progress

3. Governance

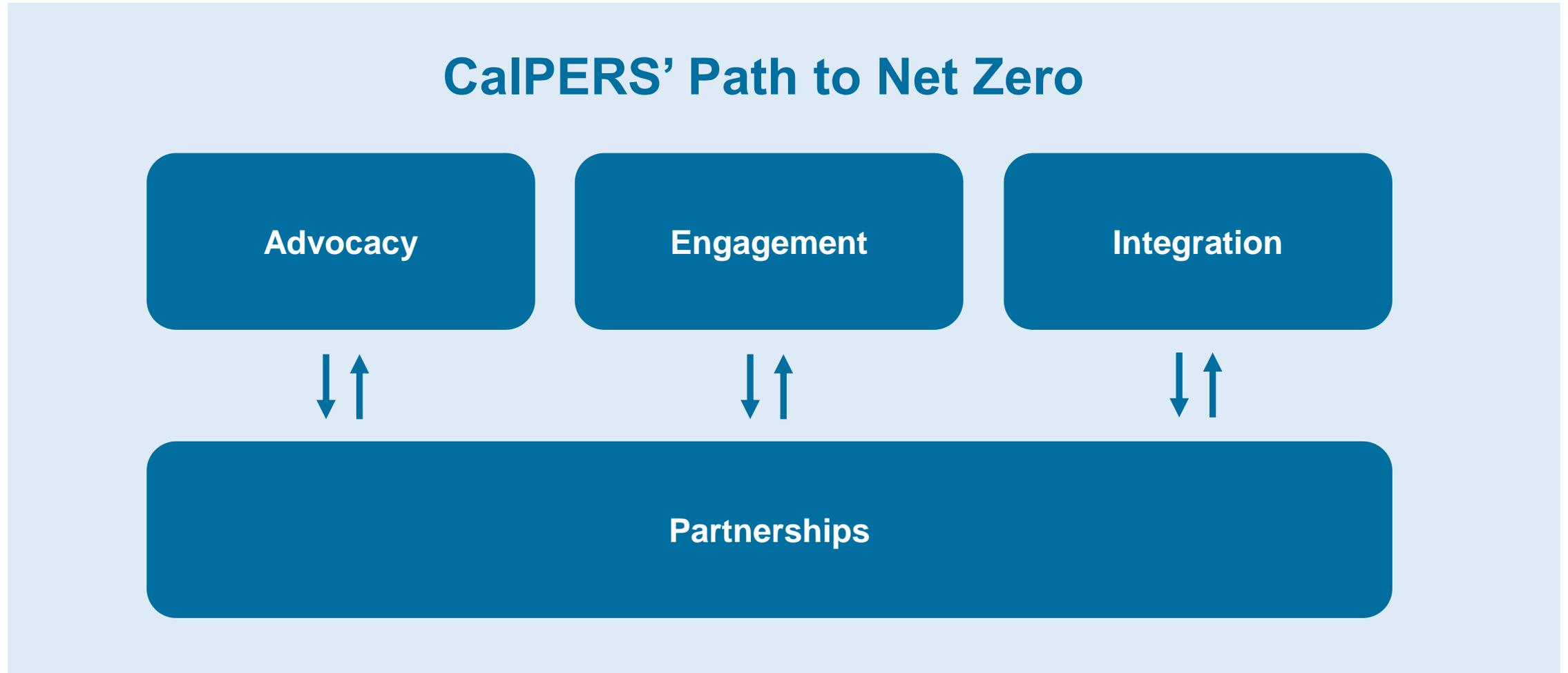
TCFD Framework highlights Governance via Board Oversight

- [CalPERS' Total Fund Investment Policy](#)
- [Investment Beliefs](#)
- [Governance and Sustainability Principles](#)
- [5-year Strategic Plan on Sustainable Investment](#)

Management Process

- [Sustainable Investment Practice Guidelines](#)
- [Reporting to the Board: CalPERS' TCFD Report](#)

4. Strategy



4. Strategy

Considerations

- CalPERS' globally diversified portfolio reflects real world emissions
- Divesting a portfolio from emissions does not insulate it from the risks of real economy emissions
- Partnership between government, business, investors and civil society is essential for successfully navigating the net zero pathway

4. Strategy

Engagement: Impact Example

CalPERS convened and cofounded Climate Action 100+

- 615 investors representing \$60 Trillion in assets
- Engaging the world's systemically important corporate greenhouse gas emitters responsible for 85% portfolio emissions
- CalPERS sits on the Steering Committee, co-chairs Asia Advisory Group and leads on 22 companies

Impact is significant

- 111 of the 167 Climate Action 100+ companies have set net zero goals by 2050
- Represents 25% of global emissions ([Bloomberg New Energy Finance](#))

4. Strategy

Climate Action 100+ Benchmark

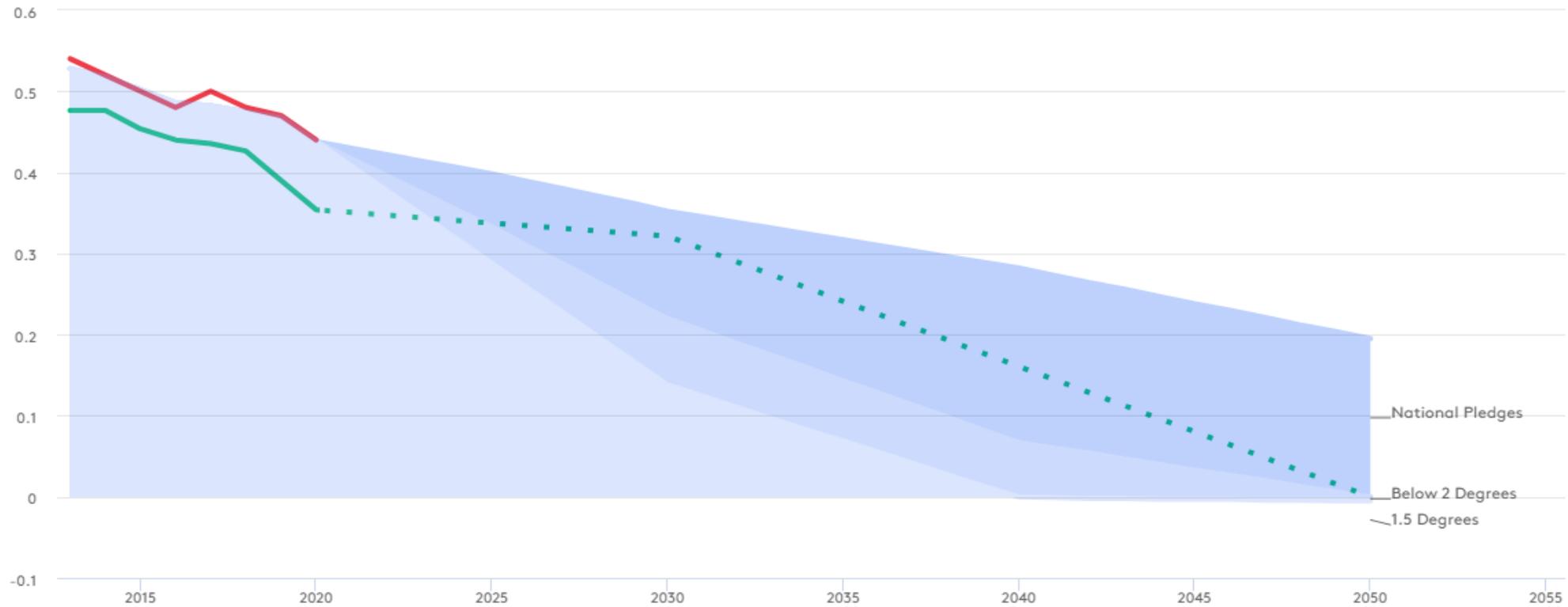
- (1) Net Zero Green House Gas (GHG) by 2050 Ambition
- (2) Long-term (2036-2050) GHG Reduction Target
- (3) Medium-term (2026-2050) GHG Reduction Target
- (4) Short-term (2020-2025) GHG Reduction Target
- (5) Decarbonization Strategy
- (6) Capital Allocation Alignment
- (7) Climate Policy Engagement
- (8) Climate Governance
- (9) Just Transition
- (10) Taskforce on Climate-related Financial Disclosure
- (11) Accounting and Audit

4. Strategy

Engagement: Impact Example

Duke Energy Time Bound Carbon Intensity Reduction Progress

Carbon intensity (metric tonnes of CO2 per MWh electricity generation)



4. Strategy

Engagement: Impact Example

Duke Energy Regulated Generation

Generation Source	2014	2050
Coal	42%	0%
Nuclear	33%	28%
Natural Gas	24%	6%
Renewables	1%	36%
Zero-emitting load-following resources (ZELFRs)	0%	30%



Duke Energy carbon emissions reduction by 2050

4. Strategy

Integration: Impact Example

Private Equity ESG Data Convergence Project



GHG Emissions



Work-related Injuries



Renewable Energy



Net New Hires



Diversity of Board Members



Employee Engagement

4. Strategy

Advocacy: Impact Example

UN Climate Change Convention: Conference of the Parties, Glasgow 2021 (COP 26) Goals

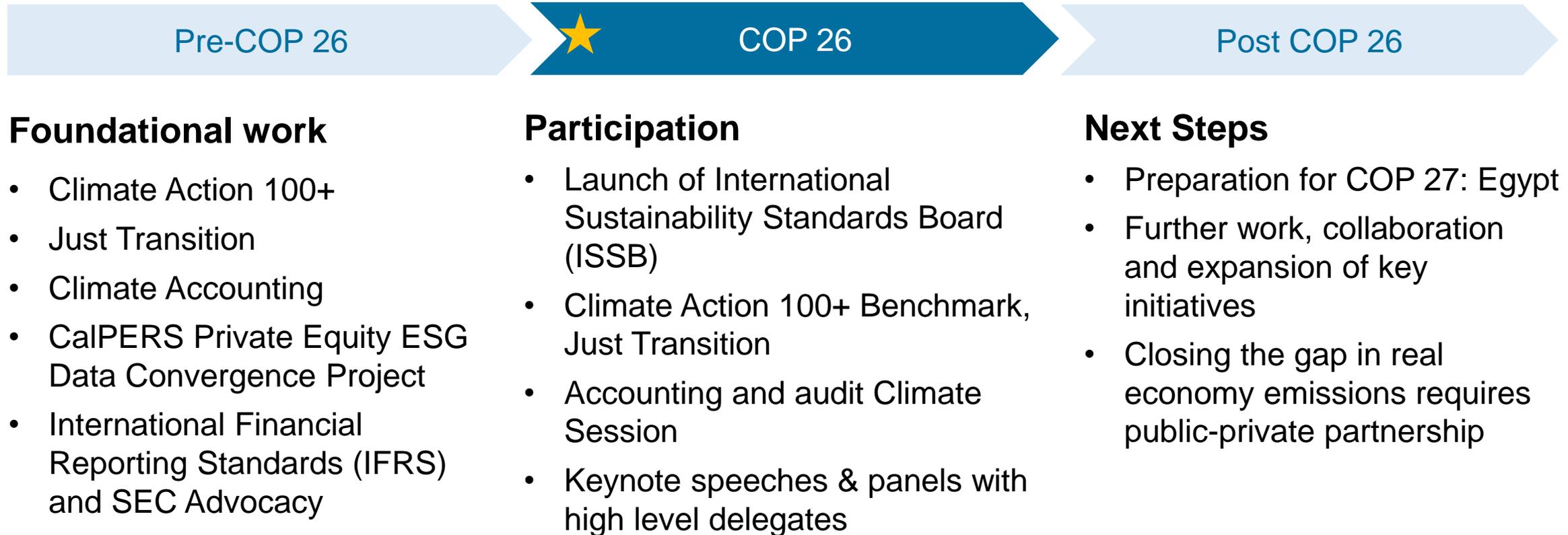
- Secure global net zero emissions by mid-century and keep 1.5°C degrees within reach
- Adapt to protect communities and natural habitats
- Mobilize finance toward \$100 Billion in climate resilience and mitigation per year
- Fostering partnership between government, business, investors, and civil society to work together to deliver results

4. Strategy: COP26 Glasgow Climate Pact

Announcement	Progress
Country Emissions Goals	New trajectory for 1.8°C-2.4°C warming down from 3.6°C warming prior to Paris
Climate Finance	Developed nations to fulfill \$100 Billion annual climate finance commitment for developing nations. Launch of Glasgow Financial Alliance for Net Zero (GFANZ).
Global Methane Pledge	100+ countries to reduce methane emissions by at least 30 percent
Global Transition from Coal	40 countries pledged to “phase down” unabated coal generation by 2030 for developed nations and 2040 for developing nations
Declaration on Forests and Land Use	130 countries commit to halt and reverse forest loss and land degradation by 2030
Fossil Fuel Subsidies	Glasgow Climate Pact calls for a phase-out of “inefficient” fossil fuel subsidies
Carbon Price	US and Europe to discuss developing a carbon border tax for high emitting sectors
US-China statement	Both countries have pledged to work together on climate change issues

4. Strategy: COP 26 Glasgow Climate Pact

CalPERS Delegate at COP 26



4. Strategy: Renewable Assets Exposure

Renewable Assets Exposure

\$1.4 Billion Total Renewables & Green Infrastructure Exposure

Approximately 22% of CalPERS' total infrastructure portfolio invested in renewables and green infrastructure

Challenges in increasing exposure to renewables

- **Scale:** Portfolio opportunities at scale are rare
- **Risk Return:** Significant return compression over last decade as more capital is chasing renewable investments
- **Policy Constraints:** Policy cap on development type investments is 10%
- **Tax Status:** Our tax-exempt status makes it more difficult to be competitive for projects that have tax equity in the U.S.

4. Strategy: Renewable Assets Exposure

Renewable Assets: Private Equity

\$42 Million identified in exposure to renewable energy companies

CalPERS Private Equity ESG Data Convergence Project will provide greater insight

Includes metrics:

- Total GHG emissions
- Percent Renewable energy consumption

4. Strategy: Renewable Assets Exposure

Renewable Assets: Global Fixed Income

\$637 Million in Green and Sustainability bonds

Green Bonds

Proceeds from these bonds are committed to environmental or climate projects, such as investing in renewable energy

Sustainability Bonds

Proceeds are committed to a mix of social and green projects

4. Strategy: Renewable Assets Exposure

Renewable Assets: Global Equity

More than two million megawatt hours (MWh) of renewable energy generated, prorated for CalPERS' ownership in Utility and Power companies

Annual Equivalent Emissions Savings

3.7 Billion



Miles driven by an average passenger vehicle

=

1.6 Billion



Pounds of coal burned

=

166 Million



Gallons of gasoline consumed

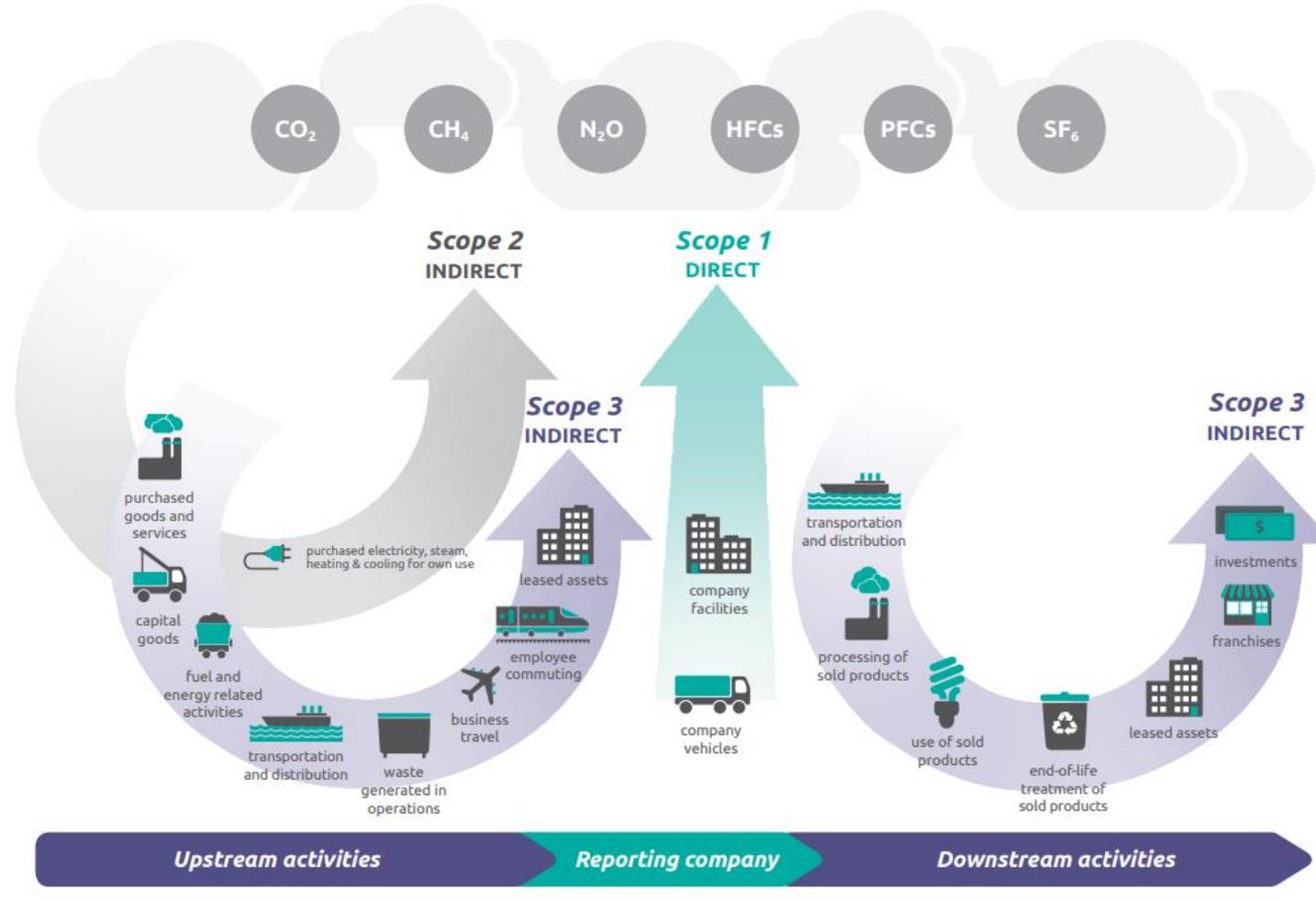
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268 Thousand



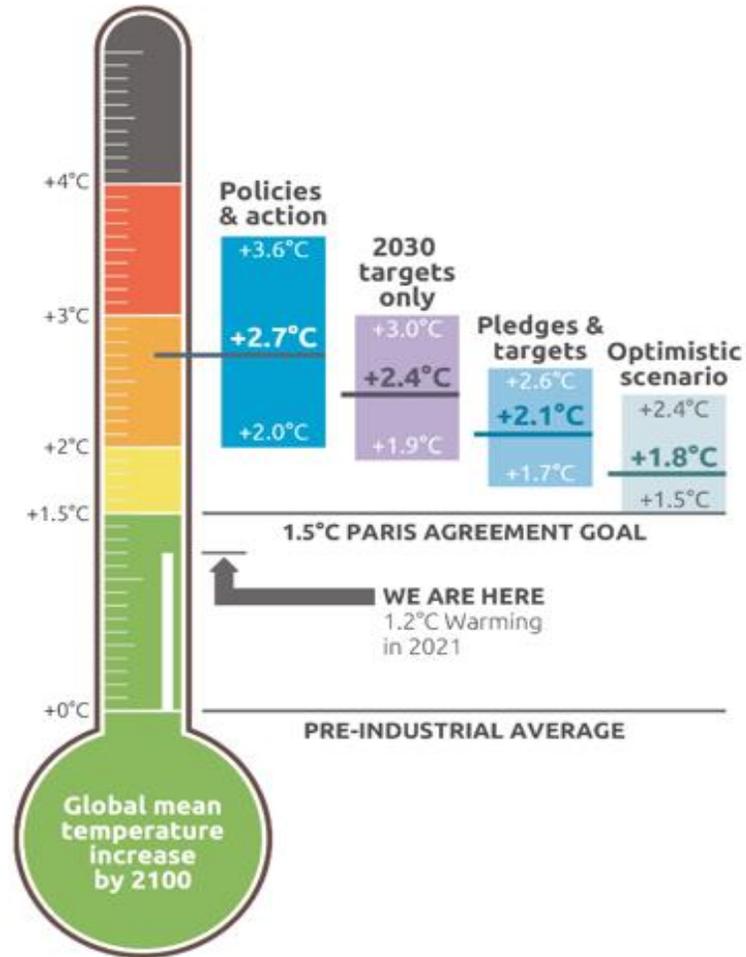
Homes' electricity use for one year

5. Risk Management: Real Economy Emissions



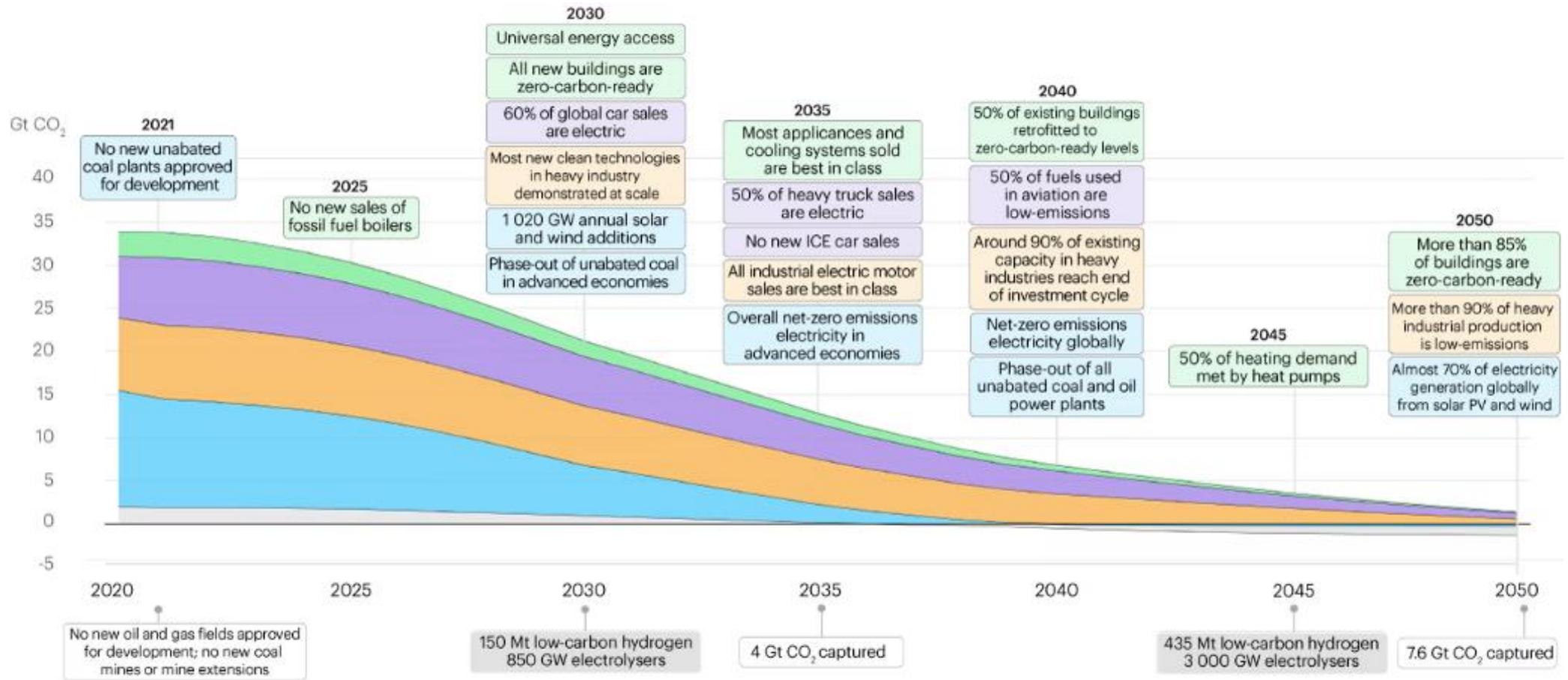
5. Risk Management: Real Economy Emissions

Post COP26 Global Warming Tracker



5. Risk Management: Real Economy Emissions

Roadmap to Net Zero



5. Risk Management

Portfolio Assessment

- Assess public market alignment and value at risk for specific climate pathways
 - Warming Potential
 - Climate Value at Risk (CVaR) based on Transition and Physical Risks and Opportunities

Transition Risks and Opportunities

- Shifts in the market, policies and technologies that can affect the financial success of existing business models and industries
- Transition Risks are significantly incorporated into CalPERS' engagements with public companies

Physical Risks and Opportunities

- Wildfires, extreme weather, sea-level rise, and drought can affect assets and disrupt portfolio companies' supply chains and operations
- Processes and tools are in place to assess CalPERS' private market investments most prone to physical risks through our Physical Risk of Climate Change (P-ROCC) framework

5. Risk Management: CalPERS Global Equity Carbon Footprint

Metric	Unit	2019	2021	Emissions Reduction
Exposure to Carbon-Related Assets	Billion \$ (% of Portfolio Value)	16.6 (7.3%)	14.5 (6.8%)	-12.8% (-0.5%)
Carbon Intensity	Tons of CO2 per Million \$ of Sales	220	180	-18.1%
Scope 1 & 2 Emissions	Million Tons of CO2	5.5	4.6	-16.4%
Scope 3 Emissions	Million Tons of CO2	24.9	22.0	-11.9%

Source: MSCI, Bloomberg, CalPERS

- 2019: based on holdings as of 12/31/19 and FY18 emissions data, 2020: based on holdings as of 09/30/21 and FY19/FY29 emission data
- Exposure includes holdings in the Energy and Utilities sectors, excluding holdings in water utilities, independent power producers/energy traders, and renewable electricity
- The Weighted Average Carbon Intensity (WACI) is calculated as the carbon intensity portfolio weighted average, where each portfolio holding carbon intensity is the ratio of the underlying company's scope 1 and 2 emissions (tons of CO2) divided by revenues (millions of USD)

5. Risk Management: Stranded Assets Exposure

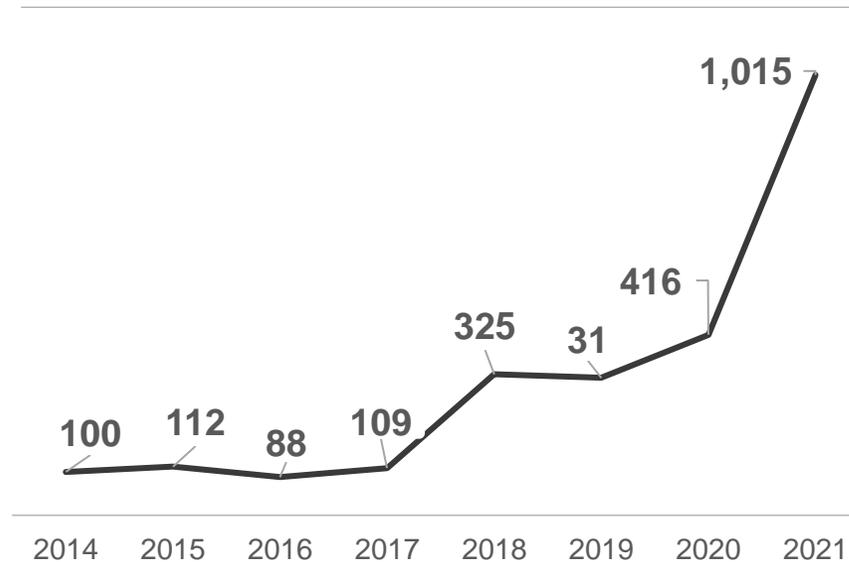
Stranded Asset: “an asset which loses significant economic value well ahead of its anticipated useful life, as a result of changes in legislation, regulation, market forces, disruptive innovation, societal norms, or environmental shocks” (Generation Foundation, 2013).

Extreme Weather Events in the US

Time Period	Billion \$ Events Per Year	Cost	Cost Per Year	Deaths Per Year
1980s	2.9	\$187B	\$18.7B	287
1990s	5.3	\$289B	\$28.9B	305
2000s	6.3	\$547B	\$54.7B	309
2010s	12.3	\$858B	\$85.8B	522
Last 5 Yrs	16.2	\$640B	\$128.1B	794

Source: National Oceanic and Atmospheric Administration, as of December 2020

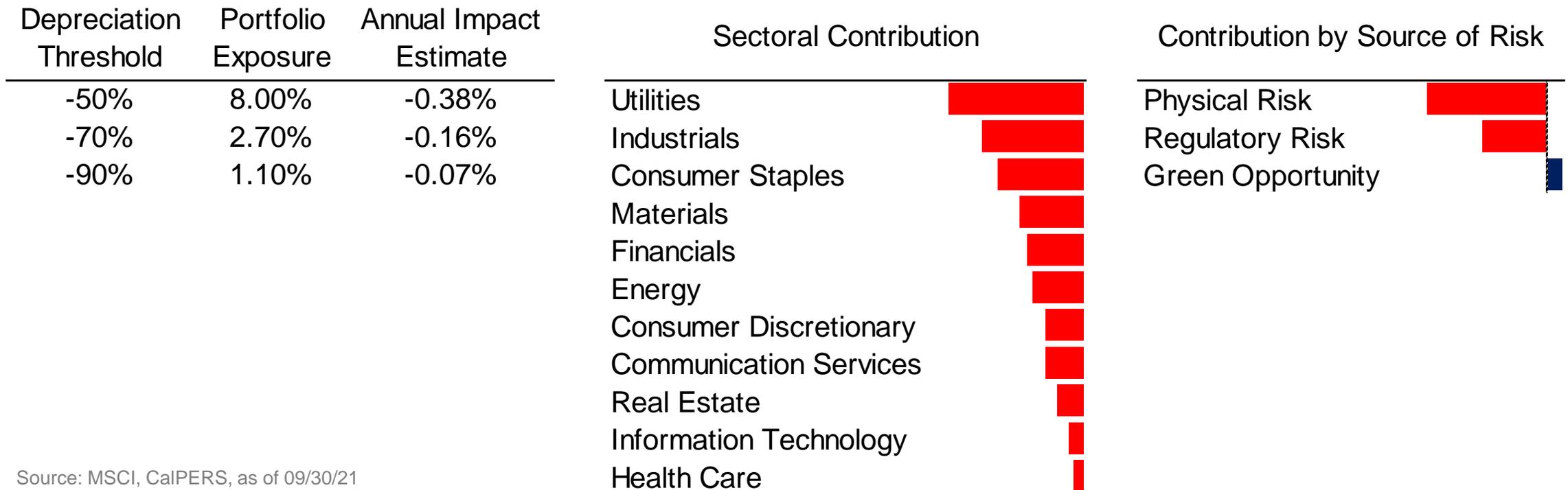
European Union Carbon Price Index



Source: Bloomberg, CalPERS

5. Risk Management: Stranding Risk Exposure (Global Equity)

Estimate impact on portfolio valuation from assets expected to lose more than x% ('threshold') within a 15-year horizon under a given climate scenario. For example: loss threshold: 70%, scenario: 2°C with aggressive physical damage estimates



Source: MSCI, CalPERS, as of 09/30/21

5. Risk Management: Stranding Risk Exposure (Private Markets)

Infrastructure

- Conventional power projects terminal values most at risk to climate regulatory risk but portfolio's focus on mid-stream assets serving strategic locations mitigates risk
- Energy-intensive digital infrastructure assets: ramp up in use of renewable energy is a positive
- Transports: largest holdings are carbon neutral or on track to be

Real Estate

- CalPERS's energy optimization initiative has lowered climate regulatory and physical risk
- Physical risks can be a major source of stranding risk in real estate; zip code and property level physical risk analytics are under review

Private Equity

- Approx. 4.8% allocation to the Energy sector
- Approx. 850 Million dollars upstream/oil and gas exploration exposure is held in funds managed by "top 40 strategic" GPs, with pre-2018 initial investment dates ("Legacy")

6. Metrics and Targets

CalPERS work on data and corporate reporting drives progress

Net Zero Goal

- CalPERS is committed to achieving portfolio emissions in line with the 1.5-degree Celsius target for the real economy by 2050

Carbon Footprint

- CalPERS released carbon footprint assessments for public equity, fixed income, and real assets.
- Private Equity carbon footprint was estimated, but not published as the actual emissions data was not available and estimations were highly unreliable
- Climate Solutions: CalPERS has about 18% of its Private Assets (Real Assets and Private Equity) invested in Climate Solutions, Renewable Energy and Sustainability Certified Buildings. Data point from 2019, will be reassessed in 2022

Advocacy and Engagement

- SEC and IFRS rules making on standards and company implementation

CalPERS Private Equity ESG Data Convergence Project

- Process in place through ESG Data Convergence Project to begin assessing Private Equity GHG emissions

7. Summary and Next Steps

Summary

- CalPERS' investment strategy on climate change: Advocacy, Engagement, and Integration is having impact to achieve risk adjusted returns for our members
- However, the world is on a +1.8°C – 2.4°C trajectory, with a goal of 1.5°C
- CalPERS' globally diversified portfolio reflects real economy emissions
- Effective strategy requires partnership with government, business, civil society, and fellow investors

7. Summary and Next Steps

Next Steps Include

- CalPERS' Sustainable Investment Research Initiative (SIRI) III
- UN Net Zero Asset Owner Alliance targets based on real economy progress
- CalPERS' 2022 Taskforce on Climate-related Financial Disclosure Framework (TCFD)
- California State SB 964 Climate Risk Report
- Preparation for COP 27 with goal of strengthening country commitments to achieve 1.5°C warming

Questions & Discussion

Appendix

United Nations Net Zero Asset Owner Alliance Members

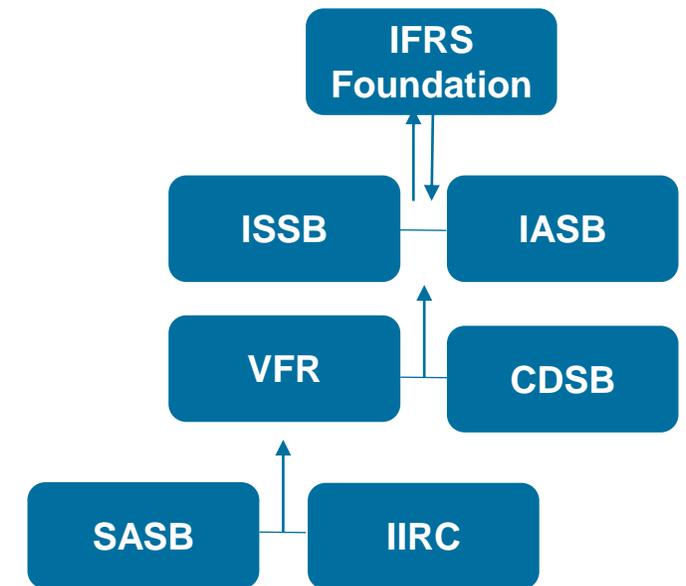


Data & Corporate Reporting

Advocacy: Impact Example

- International Financial Reporting Standards (IFRS) Foundation announced the creation of the International Sustainability Standards Board (ISSB)
- SEC rule making consultation is awaited to provide guidance on climate change disclosures for companies reporting under US GAAP

Sustainability Standards Consolidation



International Energy Agency (IEA) Progress Report

[IEA's Tracking Clean Energy Progress \(TCEP\) report](#) assess the status of 46 critical energy technologies and sectors on track to net zero scenario

Buildings

- [Building Envelopes](#)
- [Heating](#)
- [Cooling](#)
- [Lighting](#)
- [Appliances and Equipment](#)
- [Heat Pumps](#)
- [District Heating](#)
- [Data Centres and Data Transmission Networks](#)

Energy Integration

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- [Hydrogen](#)
- [Smart Grids](#)
- [Demand Response](#)
- [Direct Air Capture](#)

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- [Flaring Emissions](#)

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- [CCUS in Industry and Transformation](#)

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