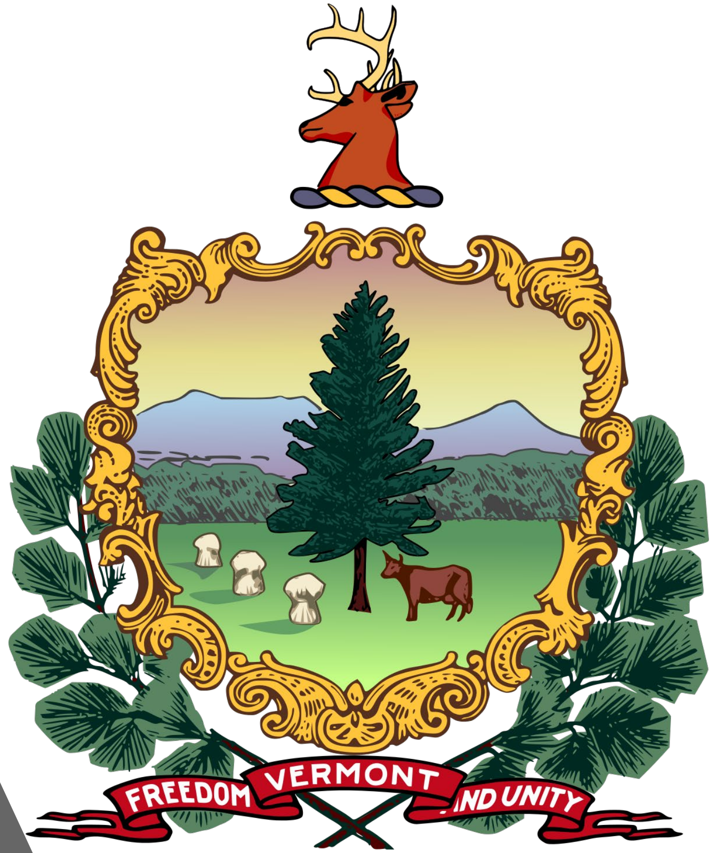
VPIC CLIMATE CHANGE ANALYSIS

April 27, 2023



VPIC recognizes the *significance* of **global climate change** as a *critical issue* and has *acted* to mitigate the risk of *catastrophic* climate change.

VPIC GOVERNANCE

Accountability: Oversight

The VPIC ESG Committee assists in oversight of matters related to VPIC's ESG policies and engagement activities.

Transparency: Disclosure

VPIC publishes a Sustainability Report annually and its proxy voting record. Morningstar noted VPIC "disclosures and voting rationale were exemplary."[1]

Resources: Human Capital

VPIC hired Segal Marco to assist Staff in efficient and effective engagement with portfolio companies that will move the needle toward the global goal.

[1] "Public Pensions Overwhelmingly Vote for ESG", August 29, 2022

THE GLOBAL GOAL

The Intergovernmental Panel on Climate Change (IPCC) states to **avoid catastrophic impacts** of climate change, "global net human-caused emissions of carbon dioxide (CO_2) would need to **fall by about 45 percent** from 2010 levels **by 2030**, reaching **'net zero' around 2050**." [1]

* The Paris Agreement is a **legally binding** international treaty on climate change that went into effect on November 4, 2016. **It strives to achieve the global goal.**

Remaining Carbon Budget

To reach net-zero by 2050 emissions need to be reduced annually about 1.4 $GtCO_2$.

For comparability, this equates to the fall in 2020 emissions resulting from COVID-19 measures.

At 2022 emissions levels, the world has 9 years to limit global warming to 1.5°C, 18 years to 1.7°C, and 30 years to 2°C warming.

Source: [Global Carbon Project]

STATE OF VERMONT GOAL

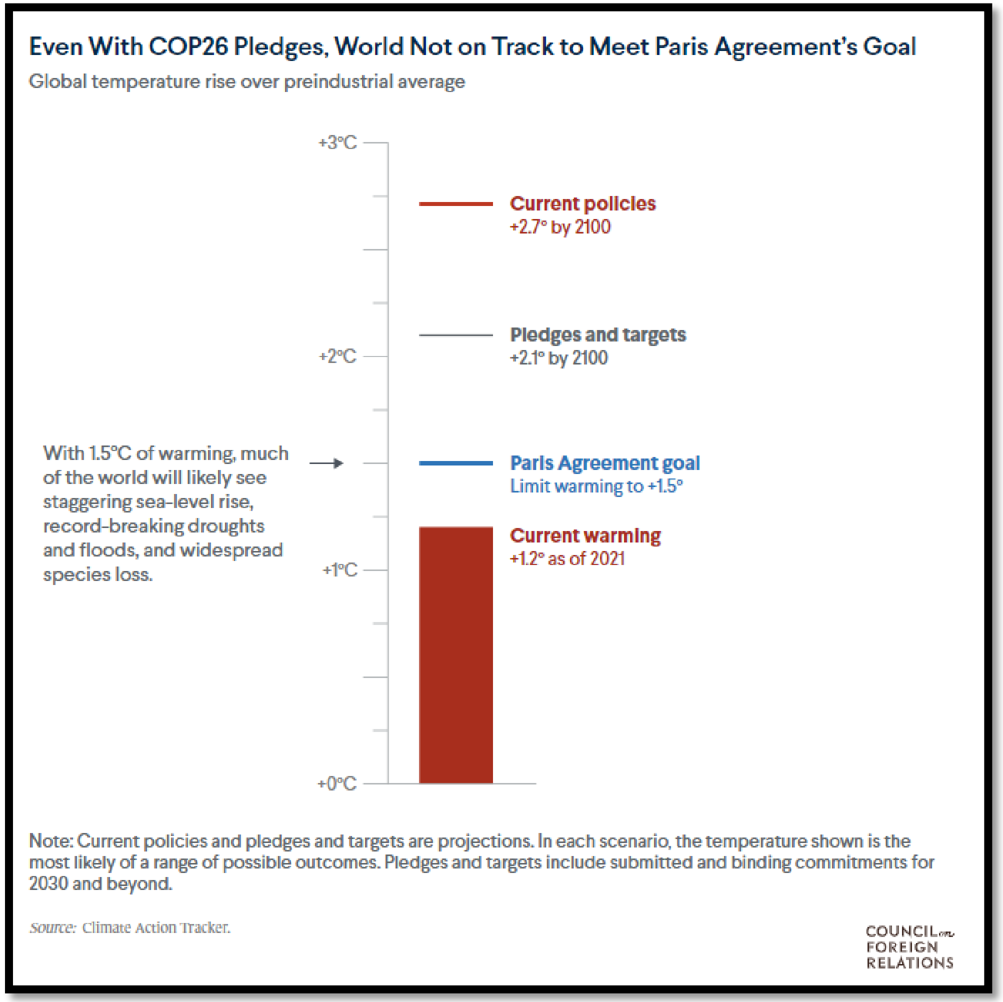
The State of Vermont in 2020 passed the Global Warming Solutions Act requiring Vermont to reduce GHG emissions to 26% below 2005 levels by 2025, 40% below 1990 levels by 2030, and 80% below 2050 levels.[1]

[1] Vermont Global Warming Solutions Act of 2020

INCREASED VELOCITY OF POLICY CHANGE, BUT WE NEED MORE…

Federal Funding

- The US passed the Inflation Reduction Act (2022) and the Infrastructure Investment & Jobs Act (IIJA), that aims to invest nearly $480 billion into infrastructure upgrades and climate change mitigation spending.
- February 2023 EU unveiled its “green deal industrial plan” with a “net zero industry act” to incentivize clean energy projects.

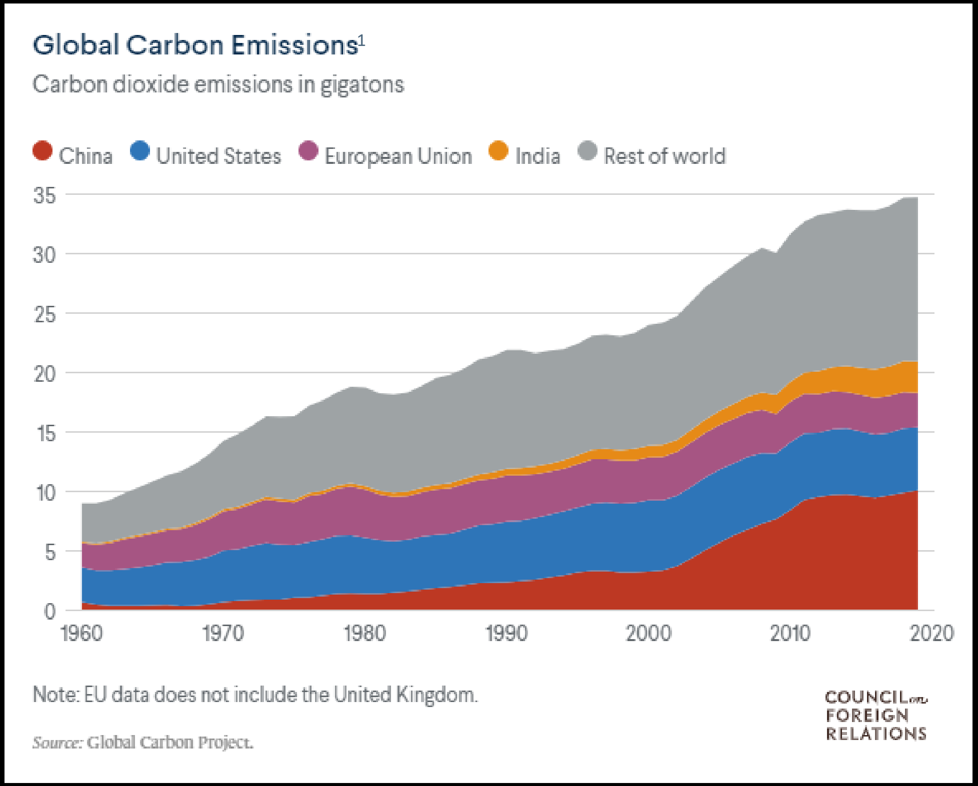


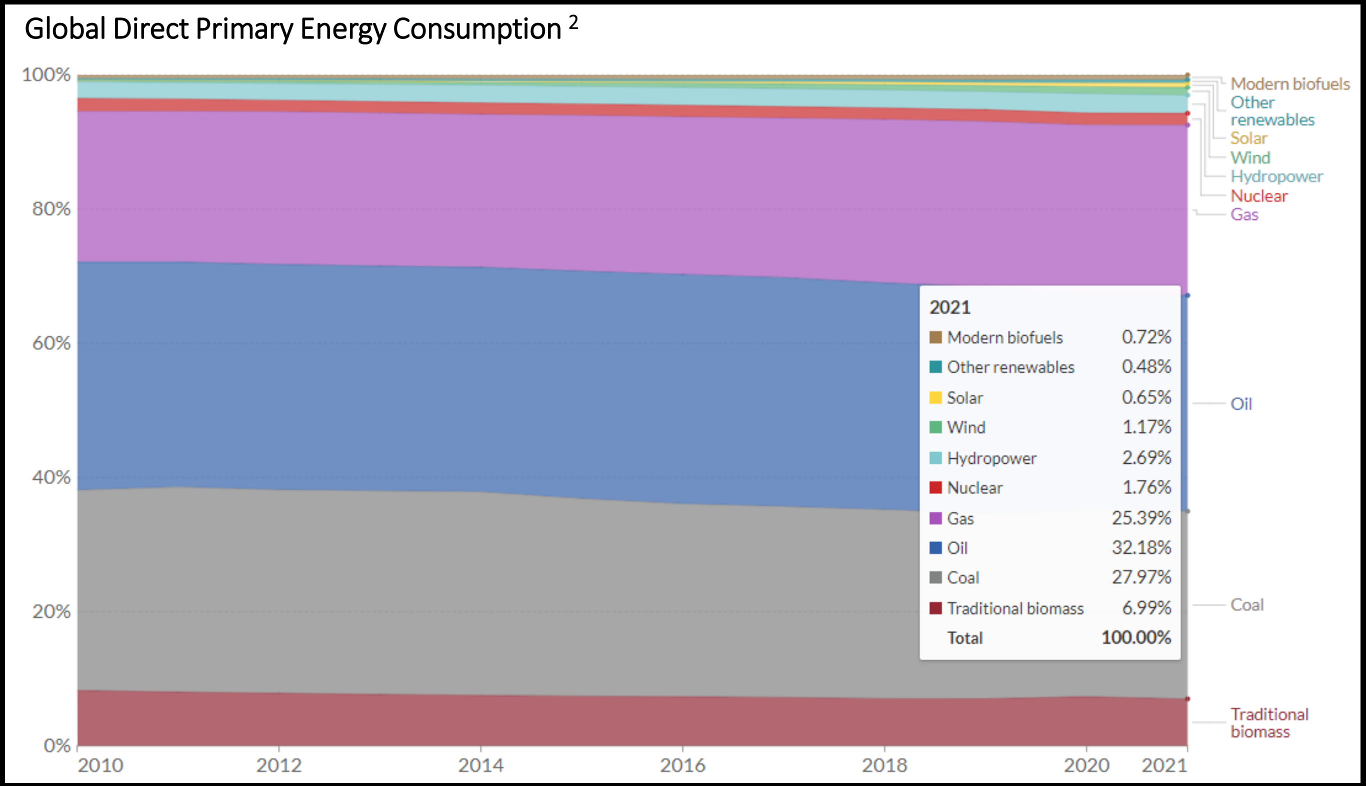
Federal Regulations

- The SEC is finalizing climate-related disclosure rules
- The EU rolled out the Corporate Sustainability Reporting Directive in 2023 requiring large companies to report on sustainability-related issues as outlined by the European Financial Reporting Advisory Group
- In February 2023, the EU required tighter sustainability management of companies’ supply chain and production
- Financial Conduct Authority (FCA) of the UK has set rules to combat greenwashing by investment managers

Click on links to see source
Chart Source: “COP26: Here’s What Countries Pledged, Lindsey Maizland, November 15, 2021

The World is dependent on *reliable* electricity, so to avoid *Catastrophic* Climate Change the World must move to Net Zero Global Emissions





[1] "China's Fight Against Climate Change and Environmental Degradation", Lindsay Maizland, Council on Foreign Relations, May 19, 2021

[2] Our World in Data based on Vaclav Smil (2017) and BP Statistical Review of World Energy

The World needs *significant* capital expenditure to achieve net zero

Companies **need capital** from institutions like VPIC to go further and faster to reach net-zero targets

To **provide this capital** VPIC and other investors must hold companies transitioning to net zero in the portfolio.

Responsible Investors hold portfolio companies **accountable** through engagement. Including requests

Climate-related Disclosure	Interim Carbon Reduction Targets	Board-level Oversight

ACCOUNTABILITY THRU ENGAGEMENT

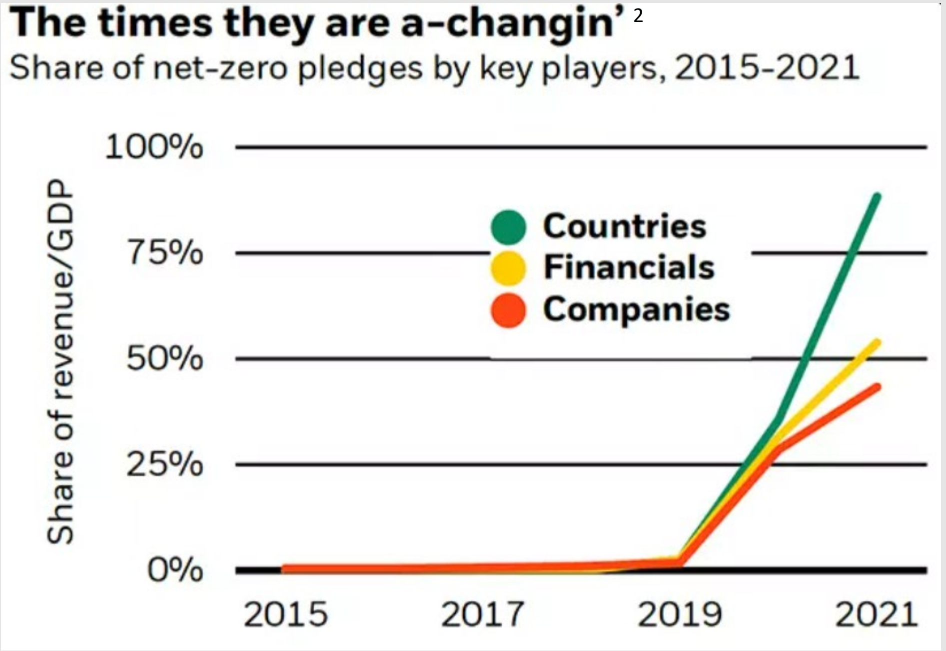
Climate Action 100+, a coalition of 700 investors with $68 trillion in assets, including VPIC, tracks the progress of engaging **166 companies** who collectively account for **80% of global industrial GHG emissions.**

In the last 5-years:

- **75% made net-zero commitments,** in contrast to 5 companies at the coalitions launch in late 2017.
- **92% have board-level oversight** of some climate change risks, increasing accountability
- **91% reported financials aligned to TCFD,** providing consistent, transparent climate-related reporting

Source: "Climate Action 100+: Progress Update 2022: Five Year of Climate Action 100+", December 2022

Over 40% of the world's 2,000 largest public companies have committed to net-zero emissions [1]



[1] *"Why 2023 might just be a turning point for climate action", Financial Times, February 27, 2023*
[2] *BlackRock Investment Institute: Managing the Net-Zero Transition, February 2022*

Quantifiable Interim Targets will keep companies on track toward net zero emission pledges

The interim steps are achieved through a variety of solutions:

- **invest** in low carbon technology
- **retire** inefficient infrastructure
- **acquire** sustainable energy sources

These actions by the company **diversify** operations and boost efficiency to increase shareholder **value** and **divest** stranded assets.

VPIC ENGAGEMENT: AN EVOLVING DIALOGUE OVER TIME

VPIC: In a shareholder resolution filed, VPIC requested the Company report if/how they would curtail their impacts on climate change from routine flaring beyond existing efforts. VPIC recommended time-bound goals and join the World Bank's "Zero Routine Flaring by 2030" initiative.

COMPANY: Agreed in early 2021 to include a Bakken flaring reduction metric as part of their 2021 annual incentive plan, further tying executive compensation to the EHS and Climate Change goals. VPIC withdrew the resolution from the proxy ballot.

Further, the Company established an executive led Net Zero taskforce to lead its climate change strategy implementation.

Company successfully reduced its flaring intensity from 2014 levels by 59%, surpassing its 50% target for 2020.

2020

2021

Company announced it joined the World Bank's flaring initiative and set a target to eliminate routine flaring by 2025.

VPIC: Met with leadership to discuss the progress of their Net Zero taskforce.

COMPANY: As required by TCFD guidance, the Company disclosed a low carbon transition framework with short, medium and long-term targets.

2022-23

VPIC: Discussing with 4 companies the reliability and methodology used to measure methane emissions. VPIC seeks to understand the material differences between reported methane emissions and direct measurement results and whether the differences would materially impact Scope 1 emissions. We suggest the companies evaluate joining the OGMP coalition to further the goal of methane emission reductions.

RESPONSE: All companies requested meetings with VPIC to discuss the topic and our questions. One announced it is joining OGMP. [2]

VPIC has shifted the discussion to focus on methane emissions that are 80 times as potent of a GHG as carbon dioxide over a 20-year period. Methane emissions multiply climate risk and represent a valuable wasted product. Low-cost reductions to minimize methane emissions could account for nearly 15% of total GHG reductions to keep the world on a 2-degree path.[1]

[1] *"Challenge" Oil & Gas Methane Partnerhsip 2.0*

[2] *"APA Corporation Announces 2023 ESG Goals", March 1, 2023*

DIVESTMENT IS EXPENSIVE

Divestment would result in increased costs associated with higher fees and performance losses from an inability to allocate to top-tier private market strategies because they do not explicitly prohibit fossil fuels in their investment policies (most do not have exposure to fossil fuels and instead invest in Cleantech opportunities).

Reduces VPIC's Future Return

-0.50% decrease in VPIC's long-term expected return means:

- A **decreased funding ratio** for VMERS from 77% to 72.5%
- Contribution **shortfall of $55 million/year** for VSERS & VSTRS, which is a projected **$750 million through 2038**

Portfolio Risk/Return Projections [2]	Current VPIC Target Allocation	VPIC Divested Allocation	
Long-Term Expected Return	5.60%	5.10% ↓	Return decreases -0.50%
Standard Deviation (Risk)	10.80%	11.50% ↑	Risk increases +0.70%

[1] Segal. Matthew Strom. February 3, 2023
[1] Projection assumes a 5% annual growth rate of the portfolio balance from December 31, 2022 until 2038. Private Market divested exposure includes EMD

VSTRS & VSERS Actuarial Projections

Teachers

2022 Valuation ($ in millions)		Baseline	6.50% Investment Return Assumption
Actuarial Accrued Liability:		$4,289.8	$4,548.3
	Change from Valuation Assumptions:		$258.5
Funded Percentage on AVA Basis:		57.3%	54.0%
	Change from Valuation Assumptions:		-3.3%
Total Normal Cost*:		$79.7	$90.7
	Change from Valuation Assumptions:		$11.0
Actuarially Determined Contribution for Fiscal 2024:		$194.3	$223.5
	Change from Valuation Assumptions:		$29.2

*Total normal cost as of July 1, 2022, adjusted for timing.

State Employees

2022 Valuation ($ in millions)		Baseline	6.50% Investment Return Assumption
Actuarial Accrued Liability:		$3,444.1	$3,653.7
	Change from Valuation Assumptions:		$209.6
Funded Percentage on AVA Basis:		69.9%	65.8%
	Change from Valuation Assumptions:		-4.1%
Total Normal Cost*:		$74.1	$83.1
	Change from Valuation Assumptions:		$9.0
Actuarially Determined Contribution for Fiscal 2024:		$121.9	$147.1
	Change from Valuation Assumptions:		$25.2

*Total normal cost as of July 1, 2022, adjusted for timing.

VMERS Actuarial Projections

2022 Valuation -- VMERS Total ($ in millions)	Baseline	6.50% Investment Return Assumption
Actuarial Accrued Liability:	$1,159.3	$1,231.7
Change from Valuation Assumptions:		$72.4
Funded Percentage on AVA Basis:	77.0%	72.5%
Change from Valuation Assumptions:		-4.5%
Current funding policy rate*:	6.674%	6.674%
Actuarially Determined Contribution Rate for Fiscal 2023:	11.602%	14.177%
Change from Valuation Assumptions:		2.575%
Excess/(shortfall):	-4.928%	-7.503%
Change from Valuation Assumptions:		-2.575%
Projected excess/(shortfall) reflecting remaining three 0.50% rate increases:	-3.428%	-6.003%
Change from Valuation Assumptions:		-2.575%

*Current funding policy rates are as of July 1, 2022.

Source: Segal. Matthew Strom. February 17, 2023

Decreased Historical Performance

Performance	3-Year Annual Return	5-Year Annual Return
VPIC Divested Portfolio Estimate	2.70%	4.01%
VPIC Actual Portfolio	4.45%	5.23%
Difference	-1.75%	-1.22%
Profit/Loss	-$83,496,233	-$52,925,875
VPIC Private Equity	*26.71%*	*25.07%*
VPIC Private Credit	*8.67%*	*7.59%*

As of 12/31/2022

Increases Management Fees

	Fee ($)	Fee (% VPIC)
VPIC Indexed Allocation	$818,338	0.028%
VPIC Divested Indexed Allocation	$1,514,998	0.052%
Difference	**+$696,660**	**+0.024%**

Methodology:* *VPIC Divested Indexed Allocation follows the pricing schedule of the VPIC Low Carbon Transition Readiness Index Fund as a proxy. ***NEPC notes on page 13 of their "MainePERS: Divestment Report", that reviewed the impact of divestment of fossil fuels for Maine PERS' portfolio, "management fees for customized strategies avoiding fossil fuel investments are likely to be 1-3 basis points higher."*** ***This equates to a near doubling in fees, as seen above.***