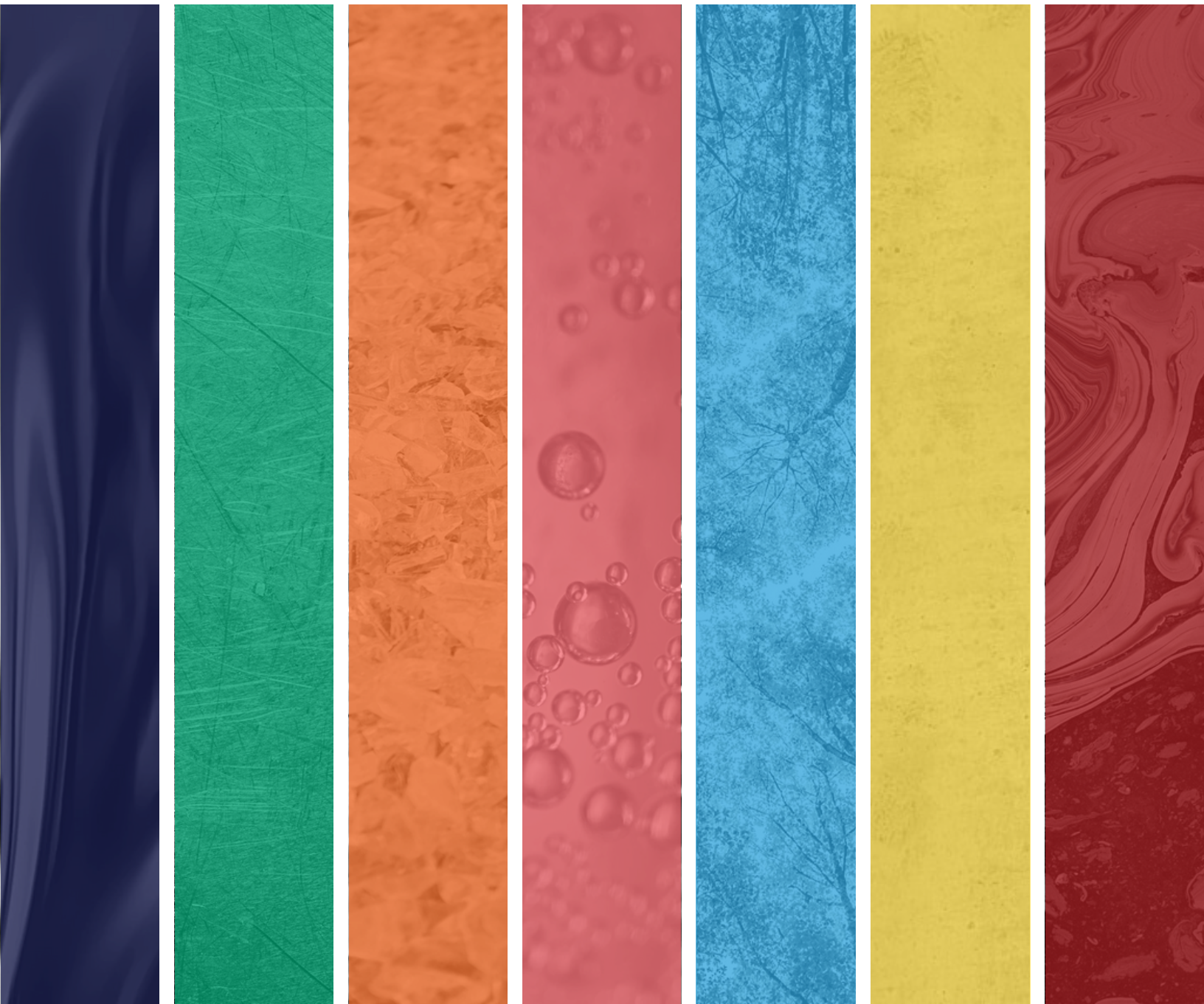
Carbon Pricing



2.3 Carbon Pricing

Overview

Carbon pricing policies, such as cap-and-trade programs and carbon taxes, establish a direct or indirect price on units of GHG emissions (dollars per ton) in a defined market. By imparting a cost to carbon pollution, these policies incentivize investment in low-carbon fuels and energy-efficient practices and technologies. Unlike some regulatory standards, carbon pricing policies offer a technology-neutral approach for driving down emissions and a cost-effective option for the diverse industrial sector, which requires a wide range of technologies and process changes to reduce emissions.[100] Carbon pricing programs can also generate revenue that state governments can redeploy toward other critical policy arenas such as industrial decarbonization RDD&D, incentives, and technical assistance, and targeting investments towards disadvantaged communities.[101]

State actions

States operate the only existing carbon market programs in the United States: **California's** Cap-and-Trade Program,[102] **Washington's** Climate Commitment Act (an under-development cap-and-invest program),[103] and the Regional Greenhouse Gas Initiative (**RGGI**, a power sector cap-and-trade program on the East Coast).[104] However, only California and Washington's programs cover industrial facilities (with annual emissions greater than 25,000 Mt CO_2e), as RGGI only targets emissions from the electric power sector. While **Oregon's** Climate Protection Program (CPP) does not directly establish a price on carbon, it does set a declining emissions cap on fossil fuels used throughout the economy, including the industrial sector. CPP also regulates GHG emissions, including process emissions, from highly emitting new and existing industrial facilities, by requiring these entities to conduct "best available emissions reduction

assessments." [105] For additional information on Oregon's program please reference ***Section 2.5: Standards***. No U.S. states or regions have adopted a carbon tax, although as of 2022 at least 28 countries are implementing carbon tax initiatives. [106] **Hawaii** studied how it could implement a carbon tax in a 2021 report. [107]

In the United States, RGGI proceeds are being used for industrial decarbonization through energy efficiency and GHG abatement programs. In 2019, **Maine** used RGGI revenues to provide electric rate relief for large manufacturers and invested in commercial and industrial prescriptive and custom energy efficiency programs. [108] In the past, **New York** has used RGGI revenues for the Industrial Innovations Program, which funds the development and demonstration of high-potential GHG emissions reduction technologies for the state's manufacturing industries. Grantees could supplement existing federal funds with RGGI dollars to carry out projects. [109] The program's administrator, the New York State Energy Research and Development Authority (NYSERDA), no longer issues solicitations or offers support under the Industrial Innovations Program but is working to support industrial innovation in the future.

California's *Cap-and-Trade Auction Proceeds Fourth Investment Plan* recommends prioritizing investment in low-carbon industry, among other sectors. In particular, the Plan prioritizes innovative projects that reduce industrial emissions through energy efficiency, renewable energy, electrification, and low-carbon hydrogen/natural gas. [110] In **New Jersey**, over $54 million of RGGI revenues have been earmarked by the New Jersey Economic Development Authority to use over the next year to establish a statewide green bank, which will leverage private funds for renewable and clean energy projects, energy efficiency, and energy storage projects in the commercial, industrial, and institutional sectors. [111] At the time of this report's writing, New Jersey's funds had not yet been expended so they are not listed in ***Table 3***. More information on programs and funding can be found below.

Table 3: Reinvestment of revenues from state carbon pricing policies for industrial decarbonization.

State	Incentive Title	Program Administrator	Funding Source	Year	Budget ($Millions)	Description
California	Food Production Investment Program	California Energy Commission	California Climate Investments	2018-2020	124	The program provides grants for food processors to implement projects that reduce GHG emissions such as clean technologies and efficient equipment.
Maine	Efficiency Maine Commercial and Industrial (C&I) Prescriptive Initiative	Efficiency Maine Trust	RGGI	2019	0.83	The C&I Prescriptive Initiative provides incentives for large energy customers in Maine, including manufacturing organizations and other industrial facilities. The program incentivizes energy-efficient solutions for heating, cooling, lighting and controls, compressed air, agriculture, water heating, and refrigeration.
Maine	Efficiency Maine Commercial and Industrial	Efficiency Maine Trust	RGGI	2019	1.4	The C&I Custom Program allows customers to implement cost-effective and site-specific energy efficiency and distributed generation projects that are not covered by incentives from the C&I

State	Incentive Title	Program Administrator	Funding Source	Year	Budget ($Millions)	Description
	(C&I) Custom Program					Prescriptive Initiative. Eligible customers include businesses, institutions, nonprofits, and governments. The Custom Program funds projects ranging from $10,000 to $1 million per customer and offers free scoping audits and technical assistance incentives.
New Hampshire	All-Fuels Program	New Hampshire electric and natural gas utilities	RGGI	2016 - 2018	1.2	The All-Fuels program targets EE measures for retail businesses and large commercial and industrial energy users.
New York	Industrial Innovations Program	NYSERDA	RGGI	2020	11.8	The Industrial Innovations Program supports development and demonstration of technologies with substantial GHG reduction potential. It focuses on thermal-efficiency innovations that reduce fossil fuels and high replication potential for manufacturing base. *Note that there have been no new solicitations or market offerings since 2014.*

Gaps and opportunities

Carbon pricing policies can indirectly contribute to "carbon leakage," which refers to the phenomenon of emissions shifting from one region to another due to an imbalance in climate policies between regions. For example, carbon-intensive industry subjected to more-stringent policies in one state could be economically disadvantaged compared to competitors in a less-regulated jurisdiction, and thus incentivized to move production across borders.[112] Existing carbon pricing schemes typically address leakage by freely allocating emissions allowances to a select set of industries, so as to ease their cost of compliance under the policy. For example, in developing their cap-and-invest program, **Washington** regulators created a separate emissions reduction pathway for about 40 facilities identified as "emissions-intensive, trade-exposed" (EITE) industries. This allowance carveout for EITEs is designed to protect these industries from dramatic market changes that would force them to limit or close operations or transfer production to a region that does not regulate carbon emissions.[113] However, policymakers have recognized that free allocation[g] is likely an inadequate solution for long-term industrial decarbonization.[114]

Border carbon adjustments (BCA), also known as border tax adjustments (BTA) and carbon border adjustment mechanisms (CBAM), are a novel set of policy tools that would complement carbon pricing policies and potentially address carbon leakage. A BCA would add a tariff to imports based on their GHG emissions profile and could add a rebate on exports. The goal of a BCA is to "level the playing field" between domestic and foreign firms that manufacture similar materials but adhere to dissimilar climate

[g] When linked to output, free allocation can effectively create a performance standard.

regulations.[115] Although only a theoretical policy at the national level at this time—and despite compatibility concerns with international trade law—policymakers around the world have expressed growing interest in implementing a BCA. For example, the European Union's Fit for 55 plan proposes a CBAM to cover multiple EITE sectors that may be launched at a global scale in 2023. Over the past two years, U.S. Congress introduced at least seven bills that included some form of BCA.[116]

If the United States fails to implement a national BCA, states are likely unable to implement their own due to the Constitution's dormant commerce clause, which prohibits state tax policies from discriminating interstate commerce. However, some scholars argue a state BCA could theoretically be designed to withstand legal challenge, based on precedent and creative interpretations of tax law.[117, 118]

Regardless of BCA policy advancement, more states with carbon prices and other industrial decarbonization policies will help reduce the threat of carbon leakage, as jurisdictions adopting similar policy environments will reduce the chance of significantly disadvantaging their local industry to those operating elsewhere.

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