

State Best Practices Guide

for Decarbonizing the Industrial Sector

December 2022

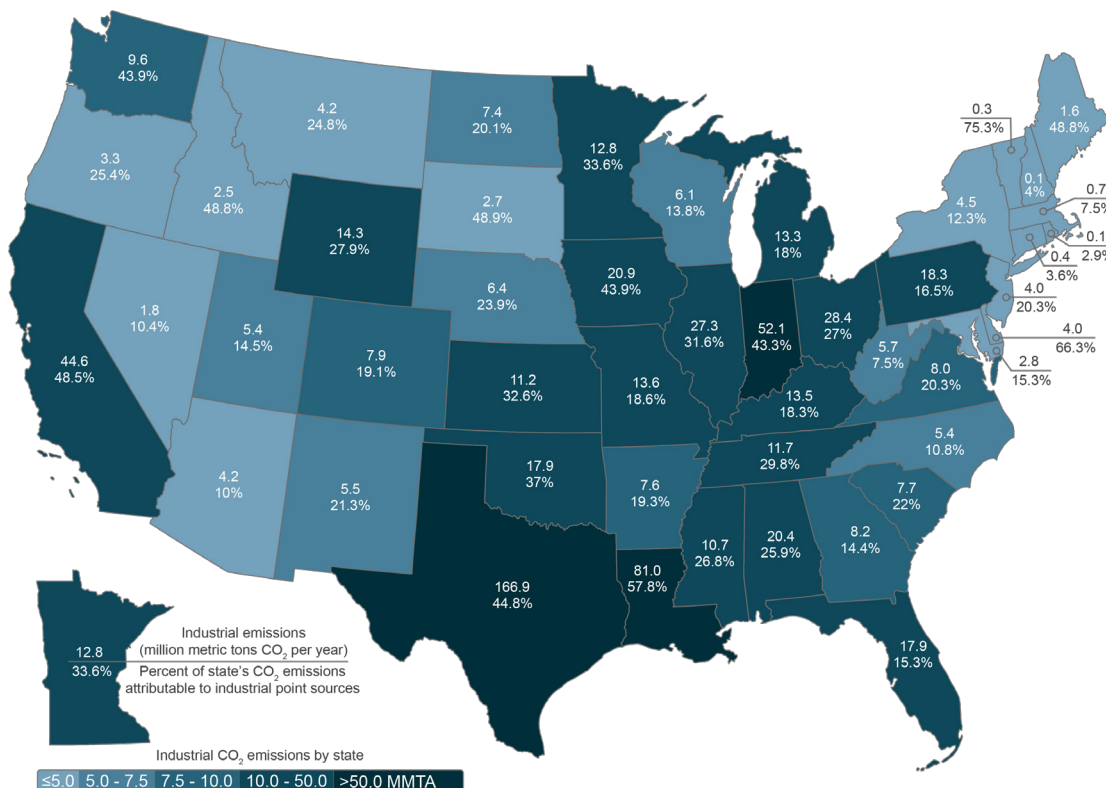


Industrial Innovation Initiative

States will play a critical role in reducing US industrial emissions. Supported by the recent influx of federal funding, states can create a regulatory and policy landscape that spurs local implementation, drives private investments, and complements federal incentives.

Industrial decarbonization is a challenge that will only be overcome should states support a full suite of policy solutions. The challenge is multifaceted. Facilities in different sectors and regions have unique needs when decarbonizing. Figure 1 shows the relative proportion of US industrial emissions on a state-by-state basis.

Figure 1. Industrial Emissions by State as a Percentage of Total State Emissions



While there is no one-size-fits-all solution, carbon management, clean hydrogen, low-carbon procurement, electrification, and efficiency policies cut across industrial sectors and can be mixed and matched to greatly reduce a state's industrial emissions. Regardless of the state's available resources or emissions profile, cross-cutting statewide planning and workforce development will also be critical considerations for equitable decarbonization.

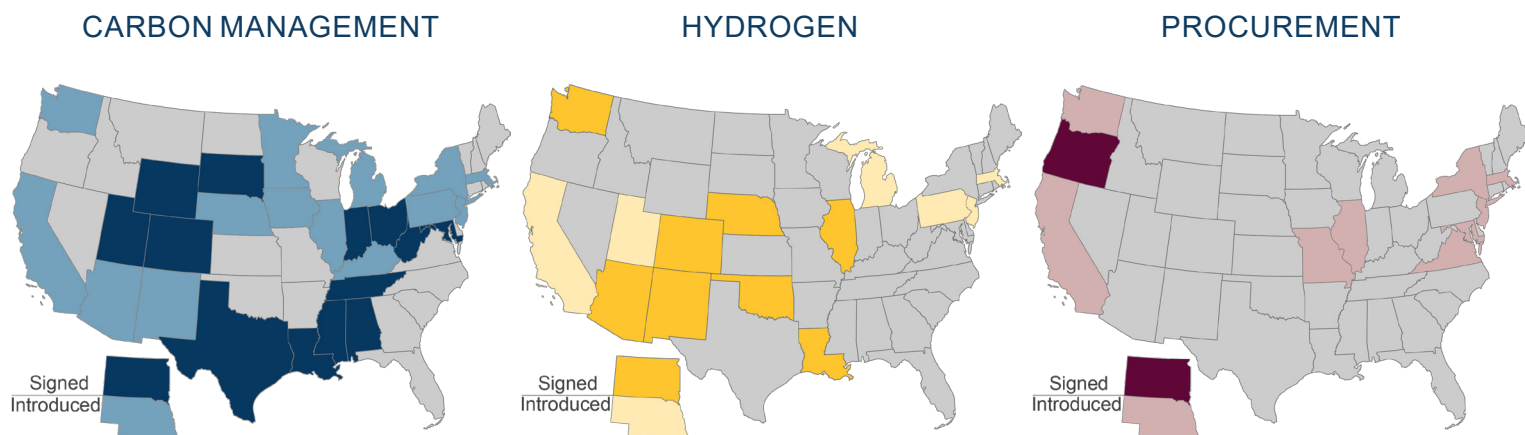
*MMTA = million metric tons per annum. Data sourced from US EPA GHGRP (2021). Industrial sectors include Refineries, Chemicals, Minerals, Metals, and Pulp and Paper.

Note: Each state in the US has a unique emissions profile. While some states may have a larger share of emissions from the industrial sector, every state will need to consider these emissions when planning for statewide decarbonization.

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Figure 2. 2022 Legislation in States by Key Topic Areas



Source: Great Plains Institute analysis based on data from Industrial Innovation Initiative, July 2022 [Legislative Digest](#) (December 2022).

Note: Over the course of 2022 legislative sessions, states made progress in three key policy areas critical to advancing industrial decarbonization: carbon management, hydrogen, and procurement. While electrification and efficiency, statewide planning, and workforce development policies are more difficult to track, they are no less important to the overall progress that has been made to advance industrial decarbonization on a state-by-state basis.

The approaches described in this guide outline state policy options and current best practices that can help scale up industrial decarbonization solutions and positively affect local communities throughout the value chain. From retrofits to fuel switching, industrial decarbonization will have far-reaching upstream and downstream impacts on local jobs, health, and economies.

How to Use This Guide

The following fact sheets provide a starting point for decision makers and advocates seeking to develop an industrial decarbonization policy framework. Each state must tailor its policies to best suit the unique assets and needs of its region; however, many lessons may be learned from looking to states which have already passed decarbonization legislation.

This publication pairs high-level policy considerations with examples to demonstrate the kinds of policy language and regulatory structures in use or under consideration across the United States. The topics covered herein are not in order of priority nor exhaustive but should be viewed as a menu of options from which a state may mix and match to suit its needs.

Industrial Innovation Initiative (I³) staff developed this resource with input from I³ participants. I³ is an ambitious coalition that aims to drive emissions reductions through policy change, supporting quality jobs and investment in key US industrial sectors. Co-convened by the Great Plains Institute and World Resources Institute, I³ builds on years of stakeholder engagement and work with state officials in the Midcontinent region, as well as extensive work advancing decarbonization solutions important to the industrial sector. For more information, visit industrialinnovation.org.

Electrification & Efficiency

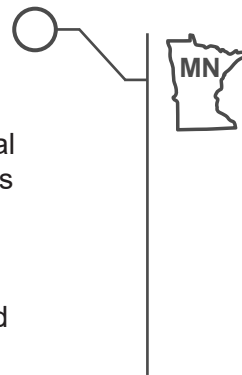


Many industrial processes—particularly those that use low- and medium-temperature heat—can be electrified to reduce their direct emissions without impacting the final product. Electrification simultaneously future-proofs industrial production and the associated high-wage jobs. It is essential to pursue energy efficiency improvements in parallel with electrification to help offset expected increases in overall electricity demand. Efficiency measures also have additional co-benefits. For example, efficiency measures can reduce overall operating expenses, which can, in turn, lower the cost hurdle for other decarbonization solutions.

Regulatory policies and planning

States should engage utilities and customers alike when doing energy system planning. At the facility level, exchanging existing equipment for electro-technologies may trigger permitting or other authorization procedures. Streamlining these processes can help avoid needlessly stalling the electrification process.

- Work with utilities and their regulators to facilitate pathways for industrial electrification, including a venue for communication between utilities and industrial customers to identify needs and facilitate collaboration.
- Allow innovation and flexibility in the resource planning process for utilities to explore alternative, lower carbon solutions to meet demand.
- Conduct a study to assess the potential change in electrical load from industrial electrification and the grid modifications (e.g., demand response measures) needed to ensure reliability.
- Clarify the authority to develop holistic energy systems and regional transmission plans to enhance grid flexibility and reliability.

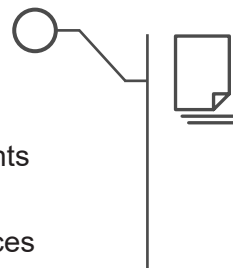


Statute encourages natural gas utilities to develop innovative resources under chapter 216B. See section [216b.2427](#) natural gas utility innovation plans and section [216b.2428](#) lifecycle greenhouse gas emissions accounting framework; cost-benefit test for innovative resources.

Material Efficiency

Innovative processes, novel mixes or feedstocks, and the use of recycled materials in the production process can increase material efficiency, allowing for less waste and fewer carbon emissions throughout each lifecycle stage.

- Include data on material use in lifecycle impact assessments for information and disclosure policies.
- Set material efficiency benchmarks to promote best practices and inform public procurement standards.
- Establish policy incentives for reuse and recycling of high-emission primary materials, such as steel.



The **International Energy Agency (IEA)** report, [Material Efficiency in Clean Energy Transition](#), details the potential for material efficiency in industry, providing analysis and policy recommendations to reduce emissions.

Electrification & Efficiency



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Financial incentives

Provide financial assistance to help transition facilities to high efficiency and electric technologies.

- Offer tax credits or grants for emerging electrification and efficiency technologies that require support for broader commercialization and deployment.
- Provide incentives and technical assistance to accelerate the replacement of large capital investments in process heat (such as boilers and large service heat pumps) and undergo energy efficiency upgrades at the point of equipment turnover.
- Offer financial assistance to cover the cost of energy audits and the potential improvements recommended by the audits.



Utah's [Industrial Energy Challenge](#) is a voluntary program that encourages new and ongoing investment in energy efficiency by Utah manufacturing and industrial companies. The challenge involves peer-to-peer networking workshops and technical training, followed by public recognition of leading industrial firms.



[Colorado](#) passed a regulation for **Greenhouse Gas Emissions and Energy Management for Manufacturers (GEMM)**, requiring facilities to show through an audit process they are using greenhouse gas best available control technologies and energy best management practices to achieve an additional 5 percent reduction in their greenhouse gas emissions. [HB 1266](#), passed in July 2021, requires Colorado's manufacturing sector as a whole to reduce their emissions by 20 percent by 2030, based on 2015 reported emissions, which will be addressed in a second phase of the GEMM rulemaking in 2022 and 2023.



New York State's Energy Research and Development Authority (NYSERDA) designed a [C&I Carbon Challenge](#) to help companies and organizations implement their best energy-saving/carbon-reduction projects through a competitive proposal process. Challenge winners will work one-on-one with a dedicated NYSERDA resource on all their proposed projects rather than navigating multiple different NYSERDA or utility initiatives.



Massachusetts' [Mass Save Program](#) offers energy efficiency incentives, rebates, and programs for businesses to incorporate energy savings into new and existing facilities.

