State Best Practices Guide

for Decarbonizing the Industrial Sector

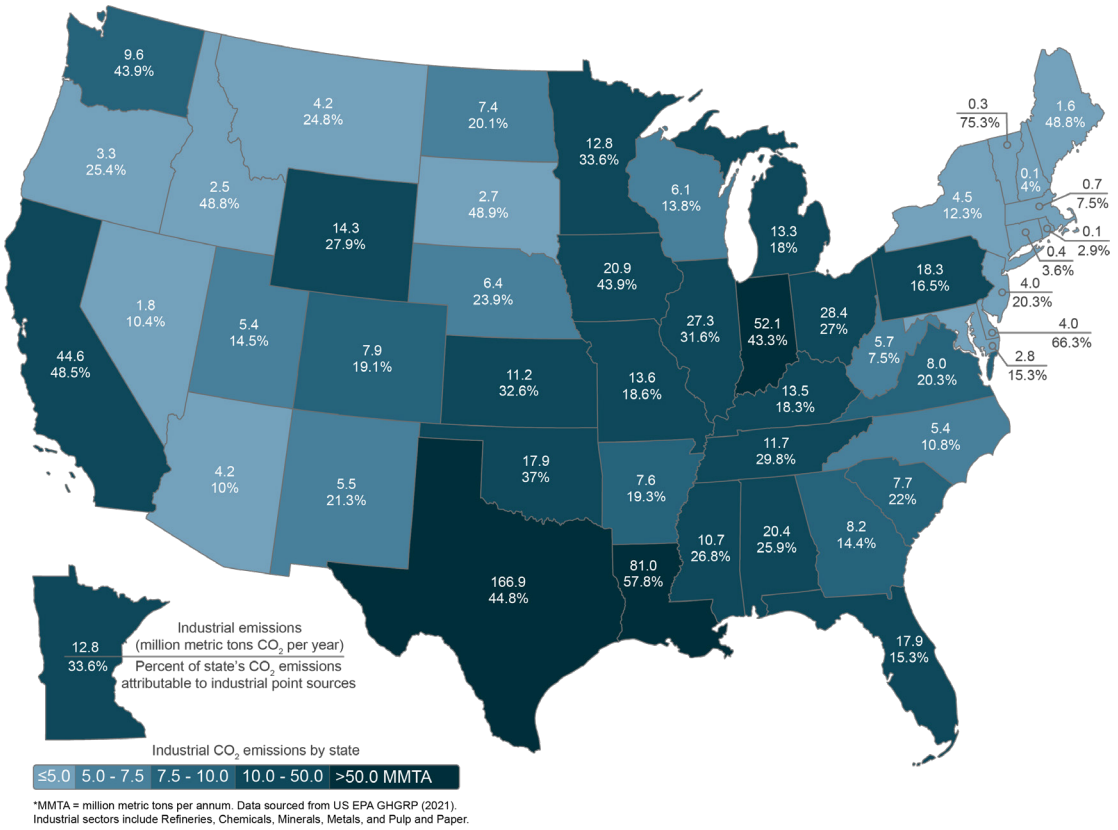
December 2022

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



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

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.

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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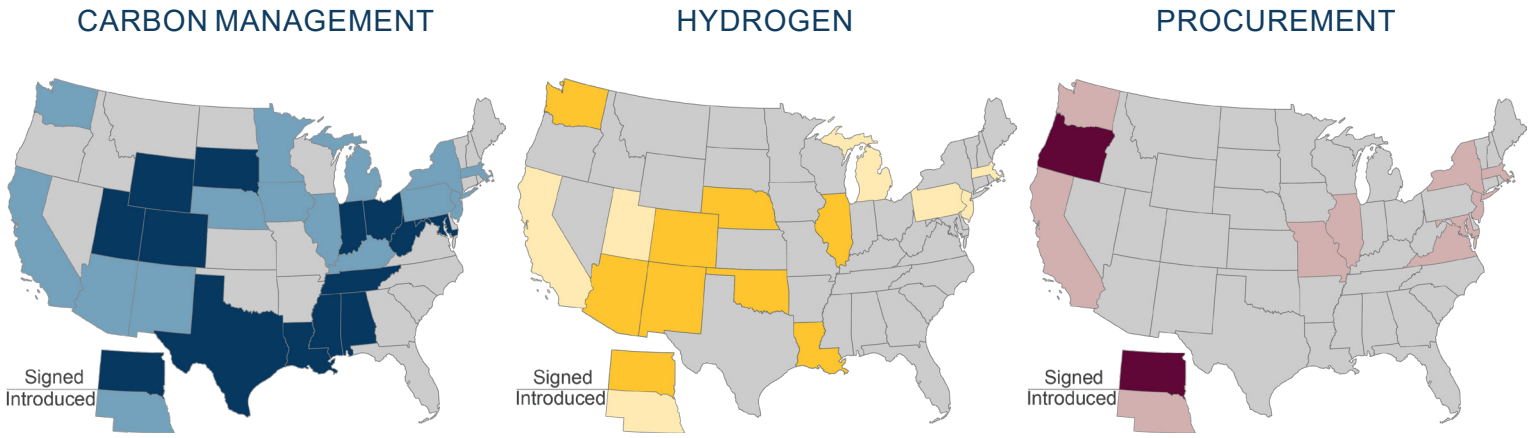
Figure 2. 2022 Legislation in States by Key Topic Areas



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.

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State Best Practices for Industrial Decarbonization

Clean Hydrogen

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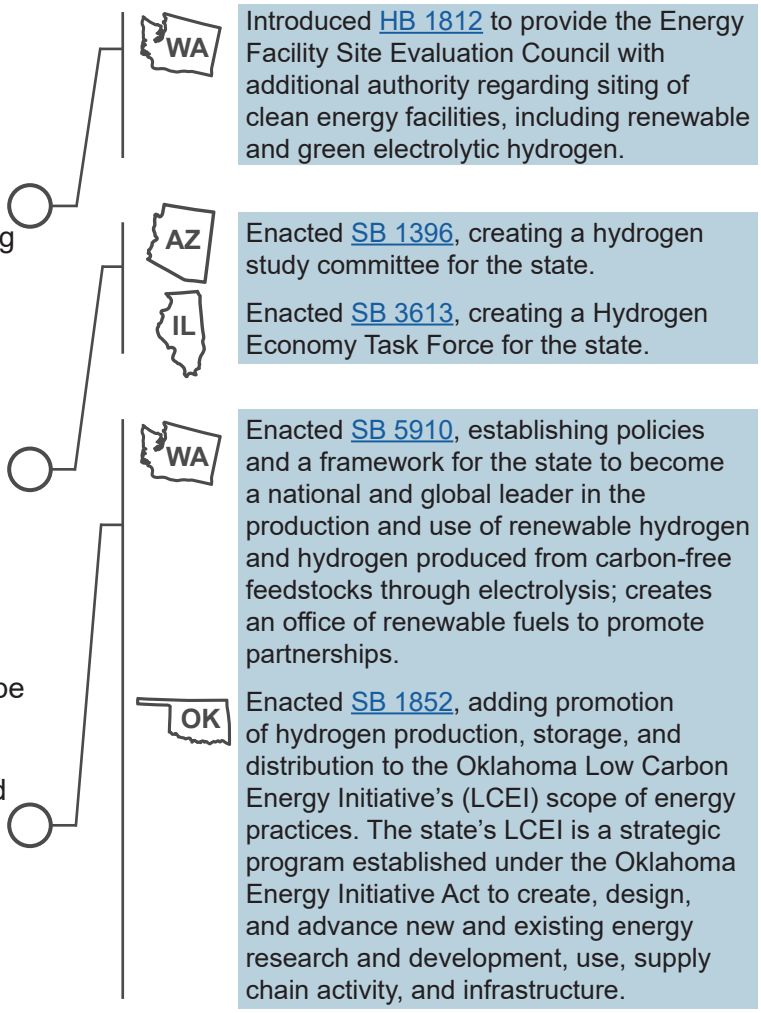
Hydrogen holds great promise as a low- and zero-carbon fuel and chemical feedstock. It can be flexibly produced given available energy resources, and when burned generates high-temperature heat that industrial processes require . Deploying clean hydrogen technologies can also utilize existing workforces and infrastructure and create new jobs. State policies are needed to reduce the cost of producing low- and zero-carbon hydrogen, spur deployment of new transport and distribution infrastructure, and develop the consumer market—in tandem with private sector investment.

Regulatory policies and planning

Prioritize hydrogen by explicitly including low- and zero-carbon hydrogen considerations within state sustainability plans and by granting state regulatory commissions the authority to include hydrogen in resource plans.

- Facilitate a predictable and timely permitting process for hydrogen infrastructure while providing clear safety standards for hydrogen production, transport, and storage.
- Create a hydrogen task force or study committee to evaluate the local ability to produce hydrogen from various fuel sources, develop the necessary transportation and storage infrastructure, and secure off-takers from diverse industry end uses, informing state targets.
- Create or expand state government offices to include clean hydrogen production, transport, storage, and related safety standards in their scope and authority.
- Engage in public disclosure and education around risks, safety, and emergency response measures for hydrogen transportation and storage.



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Financial incentives

Offer financial incentives for low- and zero-carbon hydrogen production and use them to complement federal incentives. Such incentives can also encourage project development within a state.

- Expand state clean fuels or low-carbon fuels tax credits to include clean hydrogen production, transport, and storage.
- Provide incentives and financial assistance in the deployment of hydrogen fuel infrastructure.

WA — Enacted HB 1988, providing tax deferral for clean alternative fuels production projects.

WA — Enacted SB 5910, establishing policies and a framework for the state to become a national and global leader in the production and use of renewable hydrogen and hydrogen produced from carbon-free feedstocks through electrolysis; creates an office of renewable fuels to promote partnerships.

Regional hydrogen networks

Scale hydrogen through establishing, supporting, or connecting with regional clean hydrogen hubs projects throughout the value chain.

- Create a hydrogen working group tasked with developing a hydrogen hub proposal for federal funding or the means to connect to existing or proposed hydrogen hubs in the state's region. Such efforts should consider local resources and relevant economic sectors.

Supportive federal and state policy is critical to scale up the technologies and associated infrastructure necessary to bring carbon and hydrogen solutions to scale. T**he Bipartisan Infrastructure Law of 2021** established the Regional Clean Hydrogen Hubs Program, including up to $7 billion to establish six to ten regional hubs across the US.

In February 2022, the **Great Plains Institute** released An Atlas of Carbon and Hydrogen Hubs for United States Decarbonization, identifying 14 hubs across eight regions of the US that offer the capacity to help expand and accelerate emissions reductions and carbon removal through focused coordination, deployment, and policy.

NE — Enacted LB 1099, creating a hydrogen hub industry working group.