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Love Is a Battlefield – U.S. Push to Decarbonize Playing Out Very Differently from State to State

In balancing the energy needs of today and tomorrow, conflicts can arise at every level



- In Hawaii, the move away from coal- and oil-fired power is proving to be easier said than done
- California has big plans for renewables, but has paused its transition away from gas, nukes
- Wind and solar may be booming in Texas, but they're also facing more pushback from the state
- New York's ambitious goals to rest on its ability to add new resources at an unprecedented rate
- Political changes, focus on compromise help put Michigan at the forefront of U.S. energy policy

1. Introduction

It's clear by now that the global move to decarbonize isn't going to be a straight line leading directly to abundant carbon-free power and a net-zero world. All sorts of obstacles have popped up, indicating that the energy industry's trilemma of availability, reliability and affordability not only clash with each other on occasion, they can also conflict with economic and environmental priorities. Nowhere is that more evident than in the U.S., where small-scale battles over the clean-energy transition are playing out all over the map, as we discuss in our new report.

Although renewable sources of power generation (especially wind and solar) are certainly nothing new, efforts to develop more clean sources of energy and reduce greenhouse gas (GHG) emissions have been significantly boosted by two developments in recent years. On a global level, many countries have cited concerns about the long-term impact of climate change as the backbone of ambitious plans to decarbonize the world economy and reach net-zero GHG emissions by 2050, a goal established by the 2015 Paris climate agreement.

In the U.S., energy policy shifted dramatically after President Biden took office in January 2021. A key element in Biden's 2020 campaign was a promise to reduce fossil-fuel usage and GHG emissions and to promote the development of a clean-energy industry as a way to reach net-zero goals. With a focus on the changes that need to happen in the short-term to make any long-term goals viable, the president has set out some ambitious 2030 targets: at least 80% of U.S. power to be generated from renewable sources, a reduction in GHG emissions by 50%-52% (from 2005) levels, and speeding the pace of electric vehicle (EV) adoption so they make up at least 50% of new-vehicle sales. Perhaps more importantly, the Biden administration steered to passage two significant pieces of clean-energy legislation: the Infrastructure Investment and Jobs Act (IIJA, better known as the Bipartisan Infrastructure Law) and the Inflation Reduction Act (IRA).

The administration's targets and the enactment of the IIJA and IRA provide a 50,000-foot view of what the transition to a cleaner economy could look like, but it's at the state level that the real progress — and roadblocks — can be seen most clearly. Nowhere is that more apparent than Hawaii, the focus of Section 2 of this report, where a transition from fossil fuels for power generation has long been a priority for environmental and economic reasons. The state's boldest move so far may be the September 2022 retirement of Hawaii's last remaining coal-fired power plant, the 180-MW Barbers Point facility on Oahu. While coal plants have been closing across the U.S. over the past decade, largely due to low natural gas prices but also due to tightening environmental regulations, the situation in Hawaii is unique. According to the State Energy Office, the closure of Barbers Point represented the first time a state has retired a large coal unit without transitioning first to a "bridge" fuel such as natural gas.



Construction at the Kapolei Energy Storage Facility on Oahu. Source: Goodfellow Bros.

The Kapolei Energy Storage (KES) facility, a 185-MW battery storage project (see photo above), is intended to help make up for the closure of the Barbers Point coal plant, enhance grid reliability and accelerate the integration of renewable energy. But while KES received approval from the Hawaii Public Utilities Commission in May 2021 and it was expected to be online by Q1 2023, construction has been delayed. It's also worth noting that while KES will have the capacity to harness large amounts of energy, there isn't enough being generated by renewable sources to fully charge the system. The project is supposed to get at least 75% of its power from renewables during its second through fifth years of operation, but Hawaiian Electric has said it won't meet that target for more than a decade and that renewables will be responsible for just 63% of charging over the facility's 20-year lifetime.

Our report also looks at two other states, New York and Michigan, that have made removing coal from the fuel mix a priority. New York, the focus of Section 5, has already moved away from coal. (The state's last coal-fired plant closed in 2020.) And like Hawaii, New York's dependence on oil-fired power has dropped dramatically over the past two decades, down from 11% in 2000 to near zero today. Largely because of the changes made to its fuel mix — with an assist from New York City's reliance on mass transit — New York had the lowest per-capita energy-related carbon dioxide (CO₂) emissions of any state in 2021.

As detailed in Section 6, it's a similar story for Michigan. The state's power generation has historically been dominated by coal, although its share of power generation has dropped from more than 60% of the mix in 2001 to about 30% in 2022 — but that stands to change quickly. Thanks to recently passed legislation and previous agreements with DTE Energy and Consumers Energy — the primary power generators in the state — coal-fired generation is scheduled to disappear within a decade. However, the pending elimination of coal-fired power comes with some concessions to the utilities and industry groups around the use of natural gas for power generation. The legislation enacted this year allows natural gas to be categorized as a clean energy source as long as 90% of the resulting emissions are addressed through carbon capture and sequestration (CCS).

Another state extending its reliance on natural gas is California (Section 4), which has its own set of ambitious clean-energy goals focused on renewables. One of the biggest challenges for California is likely to be how it handles its planned transition away from gas — gas-fired generation is essential to meeting today's power needs but the state's climate and air quality laws essentially require the eventual elimination of gas consumption that does not include CCS. This is all particularly problematic for a state that has been increasingly susceptible to droughts and wildfires over the last few years — droughts reduce the availability of hydroelectric power and wildfires threaten electricity infrastructure — driving up consumer demand for power and causing reliability issues with the power grid, with rolling blackouts becoming more common. That led the state to extend the deadline for eliminating seawater cooling at four gas-fired power plants along the California coast. The state had previously planned to halt seawater cooling in 2020 (a policy adopted in 2010), but the board's action extended the compliance deadline for three plants to 2026, while pushing the deadline for another to 2029.

For all the growth in renewable power generation over the past decade and more on the horizon, it's important to note that robust growth in the clean energy sector is hardly a sure thing for a variety of reasons. In Texas, the focus of Section 5, the discussion starts with what might be the biggest hurdle in some states: politics. Texans remember all too well the chaos that came with Winter Storm Uri in February 2021. And even though Uri impacted the entire power grid and everything connected to it, many were quick to blame wind and solar power for much of the state's woes. The debate about grid reliability continued into Texas's most recent biennial legislative session, which ended May 29. That session featured several bills that addressed grid modernization and resiliency, with specific provisions to boost dispatchable power generation while adding new requirements that may prove challenging for some renewable generators.

Many states have been persistent in their efforts to transition away from fossil fuels, but they have been stymied by the practicalities of energy markets, the real-world limitations on renewable energy, and concerns about pricing and reliability. It's also important to note that the states attempting to make the biggest changes are also planning to carry them out in the shortest amount of time, requiring a pace much faster than states have typically added conventional resources. Although the situation in each state included in our report is different, they each serve as an example of the need to consider the real-world impact, secondary consequences, and long-term risks of various energy policies.

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