50 STATES OF POWER DECARBONIZATION

Q1 2025 Quarterly Report

Executive Summary

NC CLEAN ENERGY TECHNOLOGY CENTER | DSIRE insight

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The NC Clean Energy Technology Center is a UNC System-chartered Public Service Center administered by the College of Engineering at North Carolina State University. Its mission is to advance a sustainable energy economy by educating, demonstrating and providing support for clean energy technologies, practices, and policies. The Center provides service to the businesses and citizens of North Carolina and beyond relating to the development and adoption of clean energy technologies. Through its programs and activities, the Center envisions and seeks to promote the development and use of clean energy in ways that stimulate a sustainable economy while reducing dependence on foreign sources of energy and mitigating the environmental impacts of fossil fuel use.

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FULL REPORT AND OTHER 50 STATES REPORTS

The full Q1 2023 50 States of Power Decarbonization report may be downloaded here. In addition to *The 50 States of Power Decarbonization*, the NC Clean Energy Technology Center publishes additional quarterly reports called *The 50 States of Solar*, *The 50 States of Grid Modernization*, and *The 50 States of Electric Vehicles*. These reports may be purchased here. Executive summaries and older editions of these reports are available for download here.

ABOUT THE REPORT

WHAT IS POWER DECARBONIZATION?

Decarbonization is an expansive term generally referring to the reduction of carbon dioxide emissions. Decarbonization can be discussed in the context of any emitting sector – electric power, buildings, industrial processes, transportation, agriculture, or the economy as a whole. This report focuses specifically on decarbonization of the electric power sector, which may include economy-wide decarbonization actions that necessarily encompass the electric power sector.

PURPOSE

The purpose of this report is to provide timely, accurate, and unbiased updates to a broad audience of state lawmakers and regulators, state agencies, utilities, the clean energy industry, and other energy stakeholders, about how states are choosing to study, adopt, implement, amend, or discontinue policies associated with power decarbonization and how utilities are planning for and implementing future generation resource additions and retirements. This report catalogues proposed and approved executive, legislative, and regulatory changes affecting electric power decarbonization during the most recent quarter, as well as actions related to investor-owned utility resource plans and generation capacity changes.

The 50 States of Power Decarbonization report series provides regular quarterly updates and annual summaries of electric power decarbonization policy updates and utility resource planning, keeping stakeholders informed and up to date.

APPROACH

The authors identified relevant policy changes and resource planning updates through state utility commission docket searches, legislative bill searches, popular press, and direct communications with industry stakeholders and regulators.

Questions Addressed

This report addresses several questions about U.S. electric power sector decarbonization, including:

- What targets are states setting for clean/renewable electricity generation or the reduction of greenhouse gas emissions from the power sector?
- How are states reforming statutes and regulations governing utility generation resource planning, procurement, and retirement?

- What electric generation capacity additions and retirements are utilities planning over the near-term and long-term?
- What specific electric generation capacity additions are utilities seeking to implement in the near-term through direct development or procurement processes? What resources are utilities requesting approval to retire in the near-term?

Actions Included

This report focuses on cataloguing and describing important proposed and adopted policy changes related to electric power sector decarbonization.

In general, this report considers an "action" to be a relevant (1) legislative bill that has passed at least one chamber, (2) an open or recently decided regulatory docket or rulemaking proceeding, (3) an executive order or significant state agency initiative, (4) a recently published integrated resource plan, or (5) a competitive procurement under development or underway for electric generation capacity. Primarily, statewide actions and those related to investor-owned utilities are included in this report. An appendix of relevant bills that have been introduced, but not yet passed a chamber, is provided at the end of the report. Specifically, actions tracked in this issue include:

Studies and Investigations

State- or utility-led efforts to study issues related to electric power decarbonization, including decarbonization pathways, cost impacts, and other specific topics.

Clean Energy Targets

New state clean energy standards, renewable portfolio standards, or technology-specific capacity targets, or changes to existing targets. Changes to implementation rules, such as eligible technologies and facility sizes, covered entities, and alternative compliance payment rates are also included.

Emission Targets and Carbon Policies

New state greenhouse gas emission reduction targets or modifications to existing targets. Changes to implementation rules for emission reduction targets are also included, as well as state or regional carbon pricing policies, such as carbon taxes or cap-and-trade programs.

Planning and Procurement Rules

Changes to rules governing the utility integrated resource planning process, as well as rules governing utility procurement of electric generation resources or retirement of existing utility-owned generation facilities.

Large Load Customer Treatment

New tariffs or rules, or modifications to existing tariffs or rules, governing data center and other new large load customer interconnection, rate structures, and contract terms, as well as options for resource procurement and on-site generation.

Utility Integrated Resource Plans

Integrated resource plans recently filed by investor-owned utilities and actively under review by regulators, as well as utility efforts to develop an integrated resource plan in advance of filing the plan with regulators.

Generation Capacity Changes

Utility-initiated requests to build, acquire, convert, or retire generation facilities, as well as utility green tariffs for large customers and state- or utility-led competitive procurements for electric generation resources (excluding utility requests for approval of individual power purchase agreements and competitive procurements for unbundled renewable energy certificates).

Actions Excluded

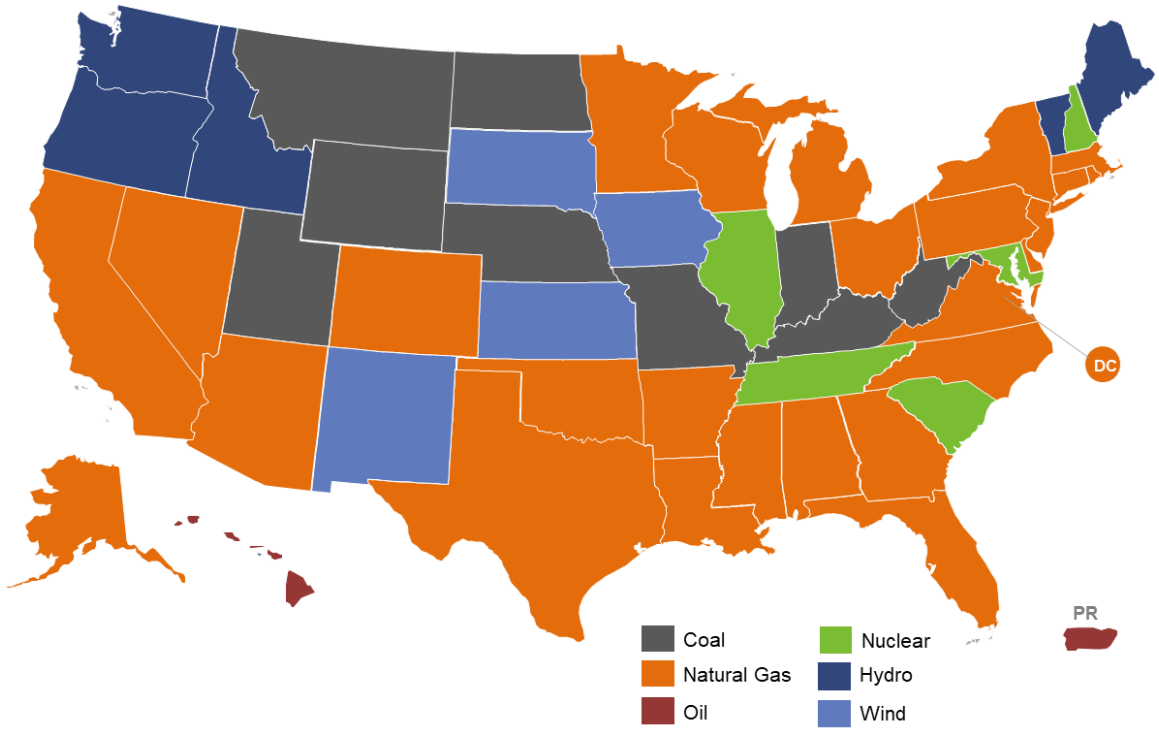
This report excludes actions that are specifically related to decarbonization of buildings, industrial processes, transportation, and agriculture. The report authors recognize that there are numerous important policy and regulatory issues related to clean energy project development that are highly relevant to overall electric power sector decarbonization. In order to maintain a well-defined scope of content, the report excludes actions specifically related to transmission and distribution planning, interconnection rules, and permitting and siting rules. Distribution system planning efforts are covered in the 50 States of Grid Modernization quarterly report, as well as a multitude of policies pertaining specifically to energy storage. Actions specific to distributed generation and community solar are covered in the 50 States of Solar quarterly report, and actions related to transportation electrification are covered in the 50 States of Electric Vehicles quarterly report. As noted above, utility requests for approval of individual power purchase agreements and competitive procurements for unbundled renewable energy certificates are excluded from this report.

DECARBONIZING THE U.S. ELECTRIC POWER SECTOR

The electric power sector in the U.S. is the second largest source of greenhouse gas emissions, behind the transportation sector, with a majority of its energy resources coming from fossil fuels. The industrial end-use sector is right behind it, followed by commercial and residential buildings. Together, these sectors account for approximately 90% of U.S. greenhouse gas emissions.[*] While the electric power sector itself accounts for 25% of emissions, efforts underway to electrify transportation, buildings, and industrial processes amplify the impact of decarbonizing the power sector.

Current federal government goals have the U.S. attaining a carbon pollution-free power sector by 2035 and a net-zero economy by 2050. As of now, 23 states have set clean or renewable energy standards or goals to reach net-zero emissions by 2050 at the latest. In addition, a plethora of electric utilities have announced net-zero or carbon neutrality goals for Scope 1, Scope 2 – and for some – Scope 3 emissions.[†]

Figure 1. Largest Contributing Resource to State Electric Generation Mix (2024)



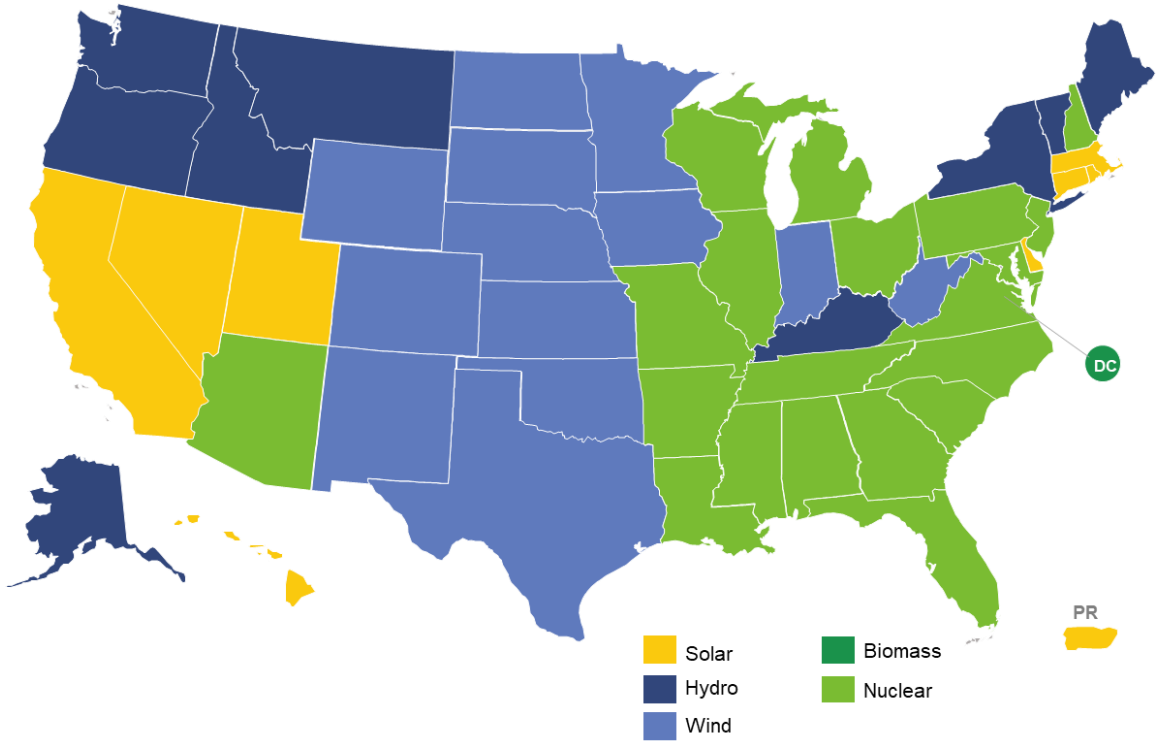
Data Source: U.S. Energy Information Administration – Electric Power Monthly, Net Generation by State by Type of Producer by Energy Source (Jan. – Dec. 2024).

[*] Environmental Protection Agency (EPA), *Sources of Greenhouse Gas Emissions*. EPA, May 2025, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions.

[†] Smart Electric Power Alliance (SEPA), *Utility Carbon-Reduction Tracker™*. SEPA, May 2025, https://sepapower.org/utility-transformation-challenge/utility-carbon-reduction-tracker/#:~:text=100%25%20carbon%2Dfree%20electricity%20by%20the%20end%20of%202030.&text=Carbon%20neutral%20scope%201%20and%202%20emissions%20by%202030.&text=Net%2Dzero%20scope%201%20and%202%20emissions%20by%202040.&text=Net%2Dzero%20CO2%20emissions%20by%202045.

However, most U.S. states and the country as a whole still have a long way to go to achieve these goals. Natural gas (43.3%) and coal (15.1%) remain two of the nation's dominant electric generation resources, and either natural gas, coal, or oil makes up the largest share of electricity generation in 36 states (See Figure 1).[‡] Despite the current dominance of fossil fuels, clean energy is becoming a mainstay in the nation's energy mix, particularly as costs decline and states acquire cleaner resources to meet climate and other environmental objectives.

Figure 2. Largest Contributing Clean Resource to State Electric Generation Mix (2024)



Data Source: U.S. Energy Information Administration – Electric Power Monthly, Net Generation by State by Type of Producer by Energy Source (Jan. – Dec. 2024).

Nationwide, clean energy resources are currently led by nuclear (18.2%), followed by wind (10.5%), hydropower (5.6%), and solar (5.1%).[§] Across the country, these resource mixes vary greatly, with different resources leading each state's clean electricity generation; currently, most states' clean energy portfolios are led by either nuclear or wind energy (see Figure 2). The overall contribution of clean energy sources to states' electricity generation also varies widely, ranging from 5% to 99% in 2024 (see Figure 3).

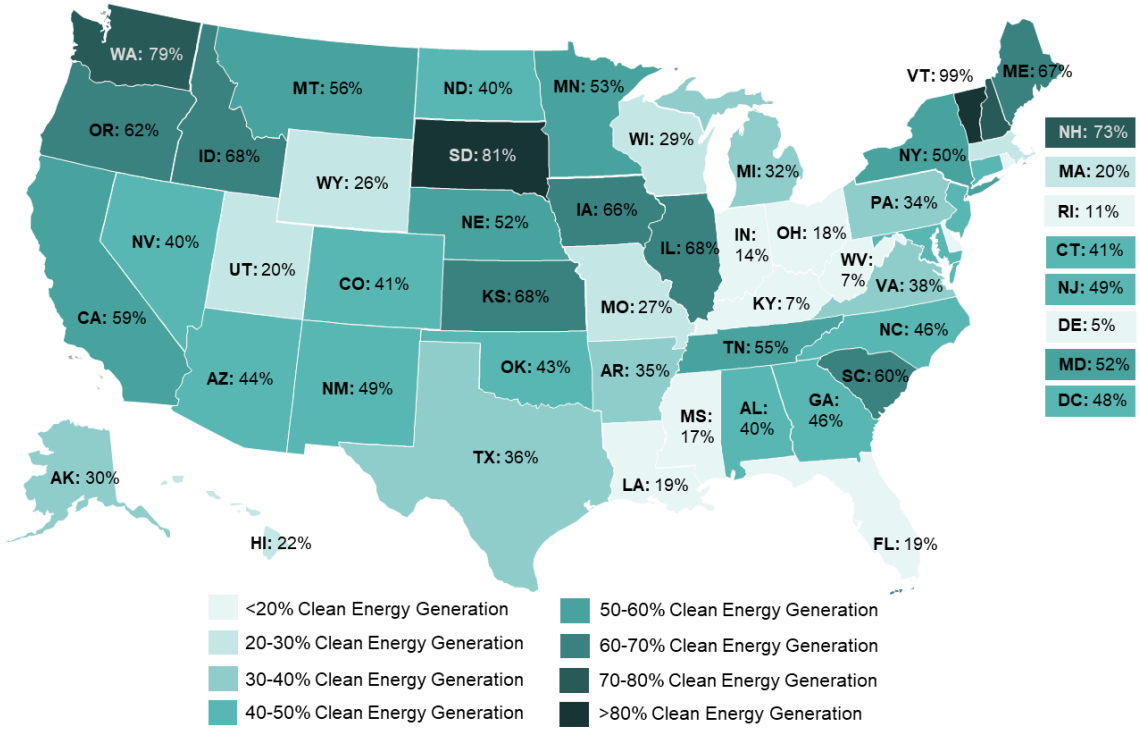
Power decarbonization involves a wide range of potential pathways and technological solutions, allowing decision-makers to pursue a variety of combinations that, in theory, lead to the same

[‡] U.S. EIA, Electric Power Monthly, Net Generation by State by Type of Producer by Energy Source (Jan. – Dec. 2024). https://www.eia.gov/electricity/data/state/.
[§] U.S. EIA, Electric Power Monthly, Net Generation by State by Type of Producer by Energy Source (Jan. – Dec. 2024). https://www.eia.gov/electricity/data/state/.

end goal. However, the cost of each pathway can vary dramatically, and challenges like global supply chains, transmission access, interconnection queues, and local permitting can impact the actual feasibility and timeline of each pathway. The timescale for implementation is a critical consideration for meeting climate goals, while cost is also highly important to minimize adverse economic impacts on individuals and businesses, particularly low-income households.

Another major factor influencing U.S. power decarbonization is the uncertainty around future availability of federal Inflation Reduction Act incentives for clean energy development. Furthermore, rapid growth in data center and other ultra large loads presents new challenges for power sector decarbonization, with potential delays in fossil fuel plant retirements and additional new natural gas generation capacity being contemplated.

Figure 3. Percentage of Clean Electricity Generated by State (2024)



Data Source: U.S. Energy Information Administration – Electric Power Monthly, Net Generation by State by Type of Producer by Energy Source (Jan. – Dec. 2024). Map represents percent of total MWh generated in each state from clean energy sources (biomass, geothermal, hydroelectric, nuclear, solar, and wind).

Although there is much work to be done from where we currently stand to achieve state and utility power decarbonization goals, the future is looking bright. Power decarbonization is being actively considered by policymakers and regulators in nearly every state in the nation, and clean energy resources are dominating most states' planned electric generation capacity additions in both the near-term and long-term. Meanwhile, states are working to create regulatory structures that will support the achievement of power decarbonization goals in the most fair and efficient ways.

EXECUTIVE SUMMARY

Q1 2025 POWER DECARBONIZATION ACTION

In the first quarter of 2025, 48 states and Puerto Rico took a total of 293 actions related to electric power decarbonization, resource planning, and large load customer treatment. Table 1 provides a summary of state and utility actions on these topics. Of the 293 actions tracked, the most common were related to electric generation capacity changes (106), utility integrated resource plans (55), and planning and procurement rules (37).

Table 1. Q1 2025 Summary of Grid Modernization Actions

Type of Action	# of Actions	% by Type	# of States
Electric Generation Capacity Changes	106	36%	33 + PR
Utility Integrated Resource Plans	55	19%	28 + PR
Planning and Procurement Rules	37	13%	23 + PR
Clean Energy Targets	33	11%	16 + PR
Studies and Investigations	28	10%	19
Large Load Customer Treatment	25	9%	17
Emissions Targets & Carbon Policies	9	3%	9
Total	**293**	**100%**	**48 States + PR**

Note: The "# of States/ Districts" total is not the sum of the rows because some states have multiple actions. Percentages are rounded and may not add up to 100%.

TOP 5 POWER DECARBONIZATION ACTIONS OF Q1 2025

Five of the quarter's top policy developments are highlighted below.

Indiana and Nevada Regulators Approve Data Center Tariffs

Utility regulators in Indiana and Nevada approved tariff changes to accommodate data center and other large load customers for two utilities. NV Energy will implement a new Clean Transition Tariff, a green tariff dedicated to large load customers. Indiana Michigan Power revised its Industrial Power Tariff to meet the needs of large load customers, and it agreed to develop a large load customer-specific green tariff, similar to NV Energy's.

Georgia Power Files 2025 Integrated Resource Plan

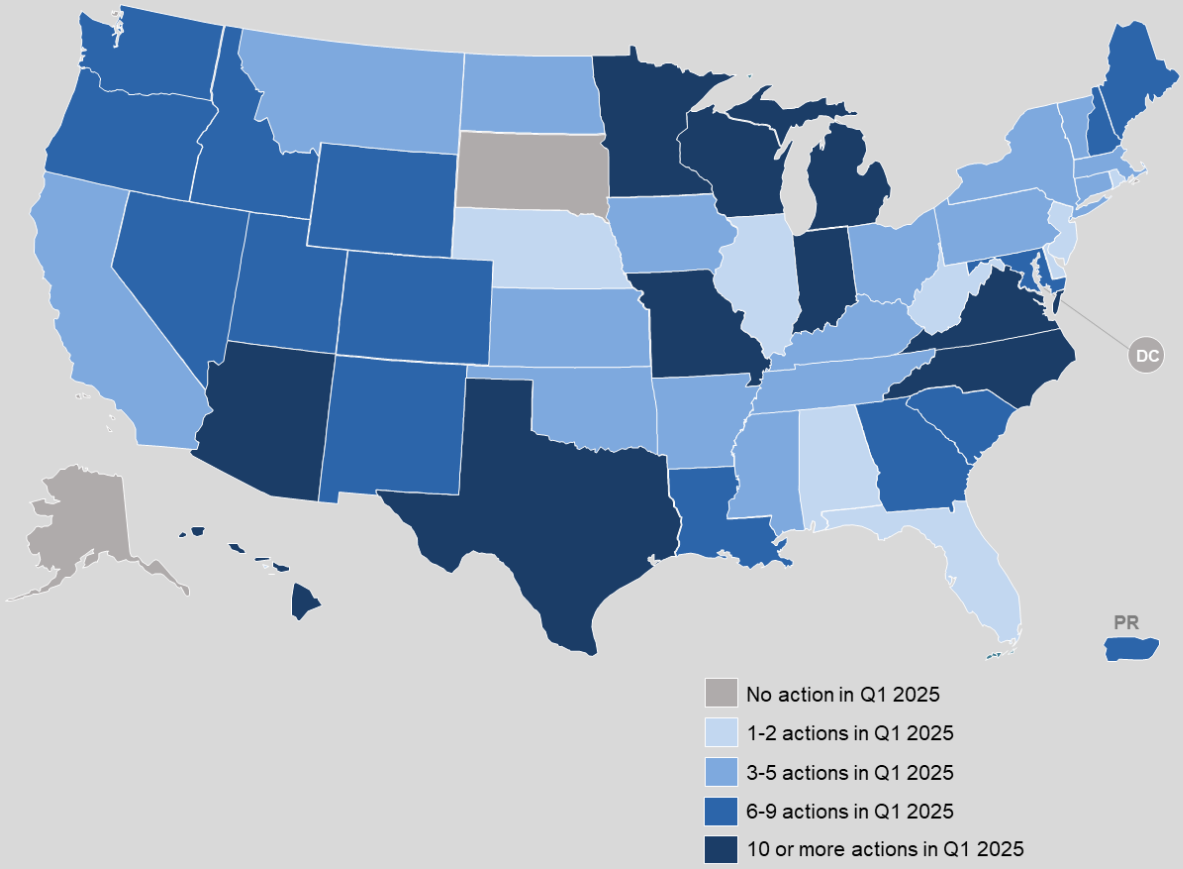
Georgia Power filed its 2025 integrated resource plan with regulators, planning for over 8 GW of load growth through 2030. The baseline scenario adds over 21 GW of renewables and natural

gas each, as well as 6 GW of storage. The utility is also planning for the addition of almost 600 MW of new nuclear, and will extend over 3.5 GW of coal and natural gas plants past their current retirement dates.

Hawaii Governor Signs Executive Order For County-Level Decarbonization

Hawaii's Governor signed Executive Order 25-01 in January 2025, which sets county-level targets for 100% renewable energy production by 2035. In O'ahu specifically, the order creates a 70% emissions reduction target compared to 2005 levels by 2035 and a goal of distributed solar on every rooftop and parking area. The order also directs the State Energy Office to evaluate options for decarbonizing distributed backup generation.

Figure 4. Q1 2025 Action on Power Decarbonization and Resource Planning



Missouri Lawmakers Establish Statutory Resource Planning Requirements

Missouri lawmakers passed S.B. 4, establishing a statutory framework for utility IRPs. The current IRP process was established by Public Service Commission regulation. The new law allows the

Commission to reject or change a utility's preferred portfolio, which currently it cannot do. Utilities must file IRPs every four years, starting in 2027. The bill also requires utilities to develop tariffs for large load customers. The Governor signed the bill in April 2025.

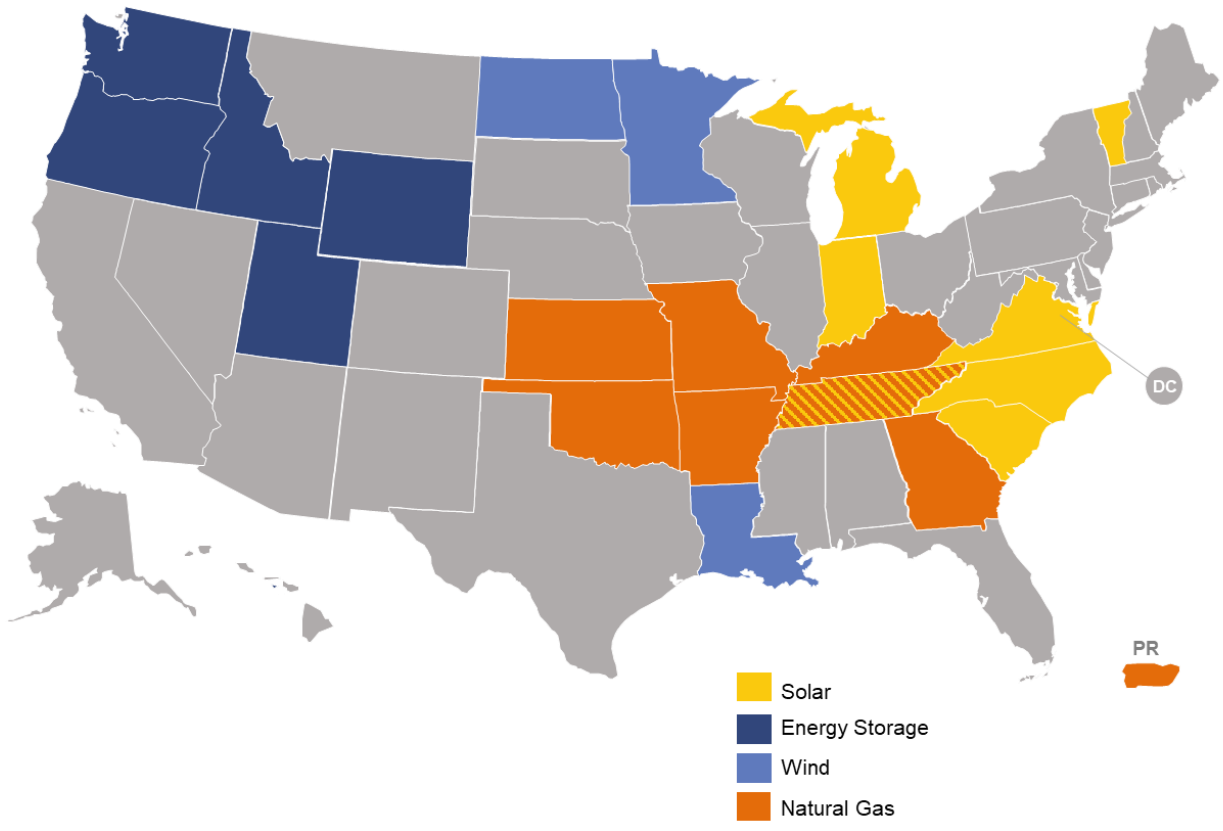
Maine Governor Releases Maine Energy Plan and Technical Report

The Maine Governor's Energy Office released the Maine Energy Plan, recommending strategies to meet the state's goal of 100% clean electricity by 2040, including a new clean energy standard, regular competitive procurements, microgrid and offshore wind deployment, a shift away from imported fossil fuels, and a focus on relieving energy burden. The Office also released a technical report concluding that the goal is achievable, beneficial, and cost-saving.

POWER DECARBONIZATION: LOOKING AHEAD

Although coal and natural gas currently account for the majority of U.S. electricity generation, solar and wind are making up the largest planned generation capacity additions for most utilities. Among integrated resource plans (IRPs) recently filed or under review by regulators in Q1 2025, planned capacity additions totaled 92,592 MW for natural gas, 88,858 MW for solar, 49,367 MW for wind, and 34,861 MW for storage, while planned coal retirements totaled 41,921 MW.

Figure 5. Q1 2025 Utility IRP Action, by Largest Planned Resource Addition



TOP POWER DECARBONIZATION TRENDS OF Q1 2025

Policymakers Seek Repeal of Energy and Emission Targets

State legislatures and governors in several states are seeking to remove targets related to clean energy deployment and emissions reductions, ranging from complete repeals to only eliminating interim targets. In Puerto Rico, lawmakers repealed the interim renewable portfolio standard (RPS) targets, leaving only its final target of 100% renewable energy by 2050; the bill also repealed the territory's energy efficiency target. The Governor of Virginia sent multiple bills back to the General Assembly with recommendations to either repeal or temporarily suspend the state's RPS, in addition to repealing the state's energy storage target; legislators rejected the recommendations in early Q2 2025. The North Carolina Senate passed a bill removing the state's interim CO_2 reduction target of 70% by 2030, retaining the final target of carbon-neutral electricity by 2050 for Duke Energy. The Wyoming House passed a bill repealing the state's low-carbon energy standard (which requires coal generation paired with carbon capture), but the Senate left the bill in committee.

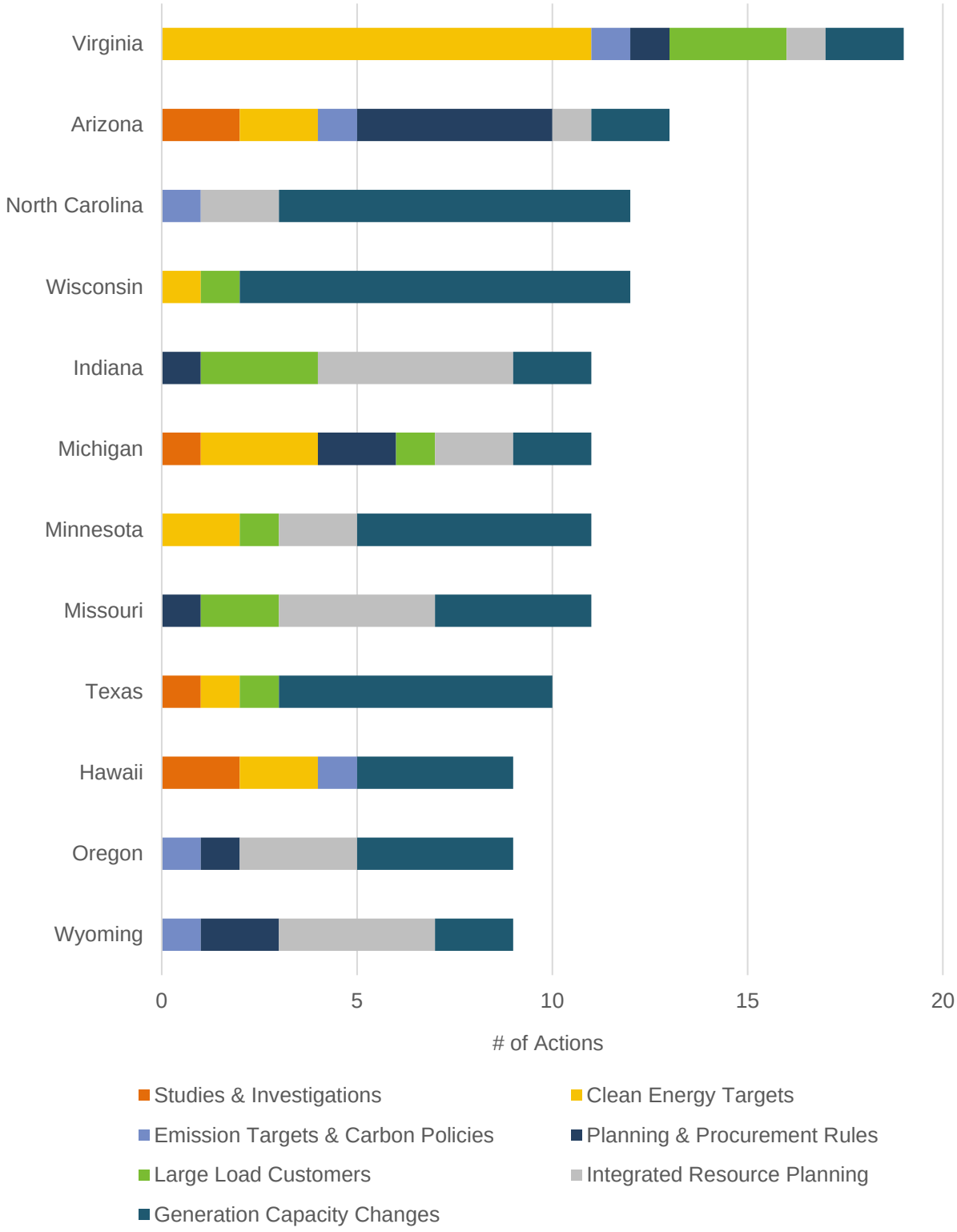
Utilities Propose Tariffs for Data Centers and Other Large Customers

With significant increases in data center and large customer load expected, utilities are proposing new tariffs or amending existing tariffs to serve these large customers. Evergy proposed a new Large Load Power Service rate in Kansas and Missouri for customers with at least 100 MW of load; the rate is paired with various riders, including a green tariff. In Michigan, Consumers Energy filed a request to allow new data center customers on its general service primary demand rate. Last year, the utility closed its large economic development rate to new data center customers. Appalachian Power in Virginia aims to revise its Large Power Service Rate to implement additional requirements for new load additions over 100 MW at an individual site or 150 MW in aggregate. Wisconsin Electric Power proposed a new Very Large Customer tariff for customers with 500 MW or more of load, along with a new Bespoke Resources Tariff to prevent generation cost-shifting to other ratepayers. Meanwhile, regulators in Nevada and Indiana approved a large customer tariff for Indiana Michigan Power and a green tariff for large customers for NV Energy.

Legislators and Utilities Pursue Development of New Natural Gas Capacity

Natural gas is now the top proposed generation source in recent utility integrated resource plans (IRPs), accounting for 30% of proposed additions, and even state governments are encouraging development of new gas generation capacity. Oklahoma legislators enacted a bill declaring natural gas as the preferred choice for all new electric generation and requiring new and expanded facilities to use natural gas. Multiple utilities proposed natural gas as their largest addition in their new IRPs, including Georgia Power (over 20 GW), Indiana Michigan Power (over 6.5 GW), Arkansas' SWEPCO (almost 4.5 GW), and Minnesota Power (750 MW). Three Missouri utilities refiled their IRPs to account for new load growth. Ameren added almost 5,000 additional MW of natural gas, for a total of 6,100 MW. Evergy Metro added 500 MW, for a total of 2,215 MW, while Evergy Central added 765 MW, for a total of 2,305 MW.

Figure 6. Most Active States of Q1 2025



FULL REPORT PRICING DETAILS

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