50 STATES OF POWER DECARBONIZATION

2024 Annual Review & Q4 2024 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 been introduced, (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. 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.

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

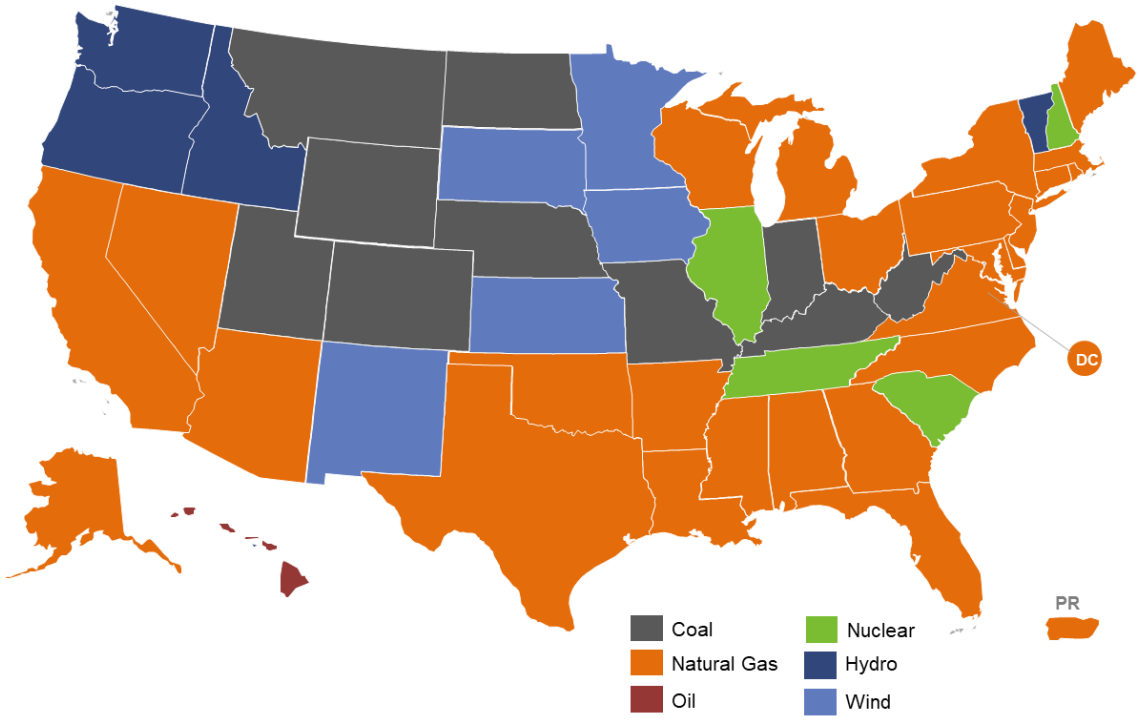
This report excludes actions that are specifically related to decarbonization of buildings, industrial processes, transportation, and agriculture. The report authors recognize that there are numerous important policy and regulatory issues related to clean energy project development that are highly relevant 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, 22 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 (2023)



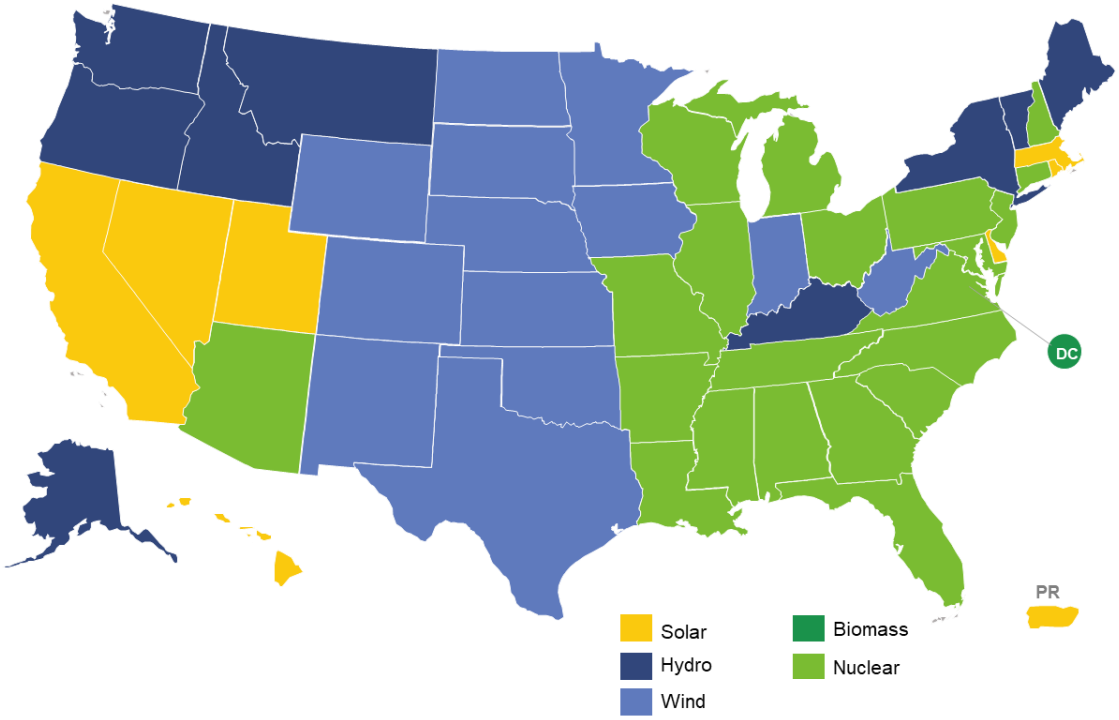
Data Source: U.S. Energy Information Administration – Electric Power Monthly, Net Generation by State by Type of Producer by Energy Source (Jan. – Dec. 2023).

[*] Environmental Protection Agency (EPA), *Sources of Greenhouse Gas Emissions*. EPA, May 2024, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions.

[†] Smart Electric Power Alliance (SEPA), *Utility Carbon-Reduction Tracker*™. SEPA, May 2024, 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 (43.1%) and coal (16.2%) 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 37 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 (2023)



Data Source: U.S. Energy Information Administration – Electric Power Monthly, Net Generation by State by Type of Producer by Energy Source (Jan. – Dec. 2023).

Nationwide, clean energy resources are currently led by nuclear (18.6%), followed by wind (10.2%), hydropower (5.7%), and solar (3.9%).[§] 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 2023 (see Figure 3).

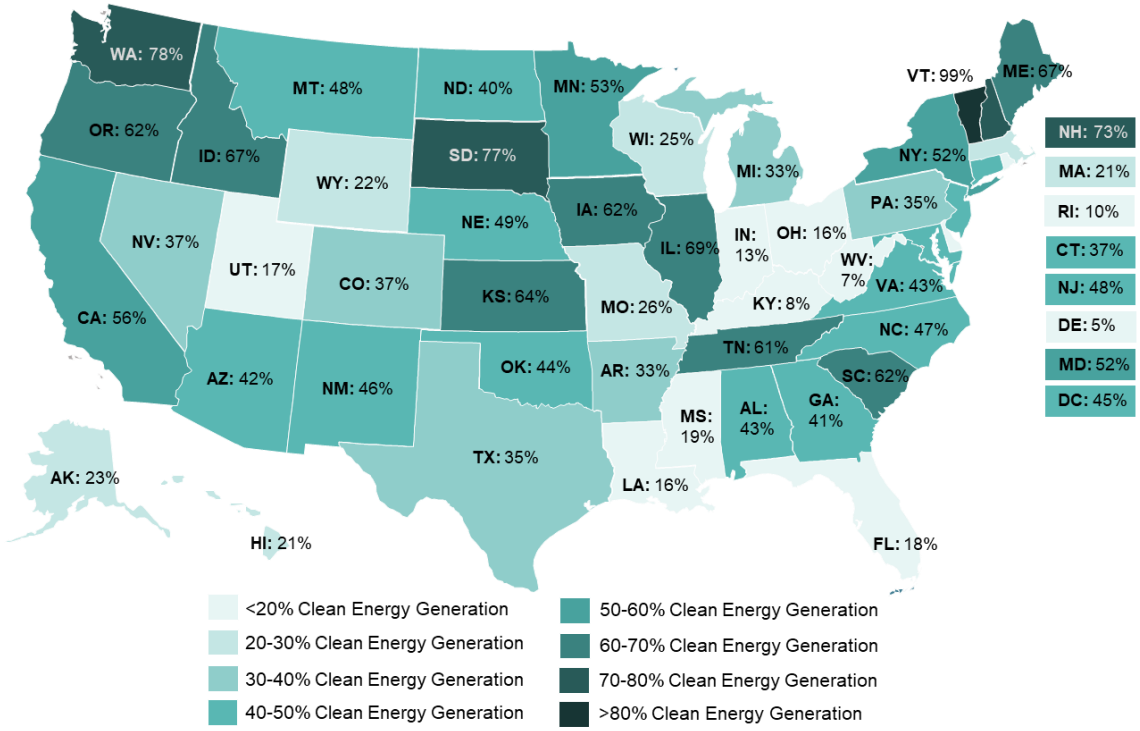
Power decarbonization involves a wide range of potential pathways and technological solutions, allowing decision-makers to pursue a variety of combinations that, in theory, lead to the same

[‡] U.S. Energy Information Administration (EIA), *What is U.S. electricity generation by energy source?* U.S. EIA, February 2024, https://www.eia.gov/tools/faqs/faq.php?id=427&t=3. and U.S. EIA, Electric Power Monthly, Net Generation by State by Type of Producer by Energy Source (Jan. – Dec. 2023). https://www.eia.gov/electricity/data/state/.
[§] U.S. EIA, *What is U.S. electricity generation by energy source?* U.S. EIA, February 2024, https://www.eia.gov/tools/faqs/faq.php?id=427&t=3.

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 federal Inflation Reduction Act, signed into law in 2022. The Act includes significant incentives, including an array of tax credits and grants, for clean energy development and greenhouse gas emission reduction projects, upending the assumptions used in most existing technology deployment projections, cost-benefit analyses, and utility resource plans.

Figure 3. Percentage of Clean Electricity Generated by State (2023)



Data Source: U.S. Energy Information Administration – Electric Power Monthly, Net Generation by State by Type of Producer by Energy Source (Jan. – Dec. 2023). 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

2024 POWER DECARBONIZATION ACTION

In 2024, all 50 states plus DC and Puerto Rico took a total of 707 actions related to electric power decarbonization and resource planning. Table 1 provides a summary of state and utility actions on these topics. Of the 707 actions tracked, the most common were related to electric generation capacity changes (162), planning and procurement rules (145), and clean energy targets (140).

Table 1. 2024 Summary of Power Decarbonization Actions

Type of Action	# of Actions	% by Type	# of States
Electric Generation Capacity Changes	162	23%	37 + PR
Planning and Procurement Rules	145	21%	41 + PR
Clean Energy Targets	140	21%	32 + DC
Studies and Investigations	100	14%	30 + PR
Utility Integrated Resource Plans	89	13%	33 + PR
Emissions Targets & Carbon Policies	71	10%	28
Total	**707**	**100%**	**50 States + DC, 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 TEN MOST ACTIVE STATES OF 2024

Ten states taking the greatest number of actions related to power decarbonization and resource planning, or some of the most impactful actions, are noted below.

Vermont

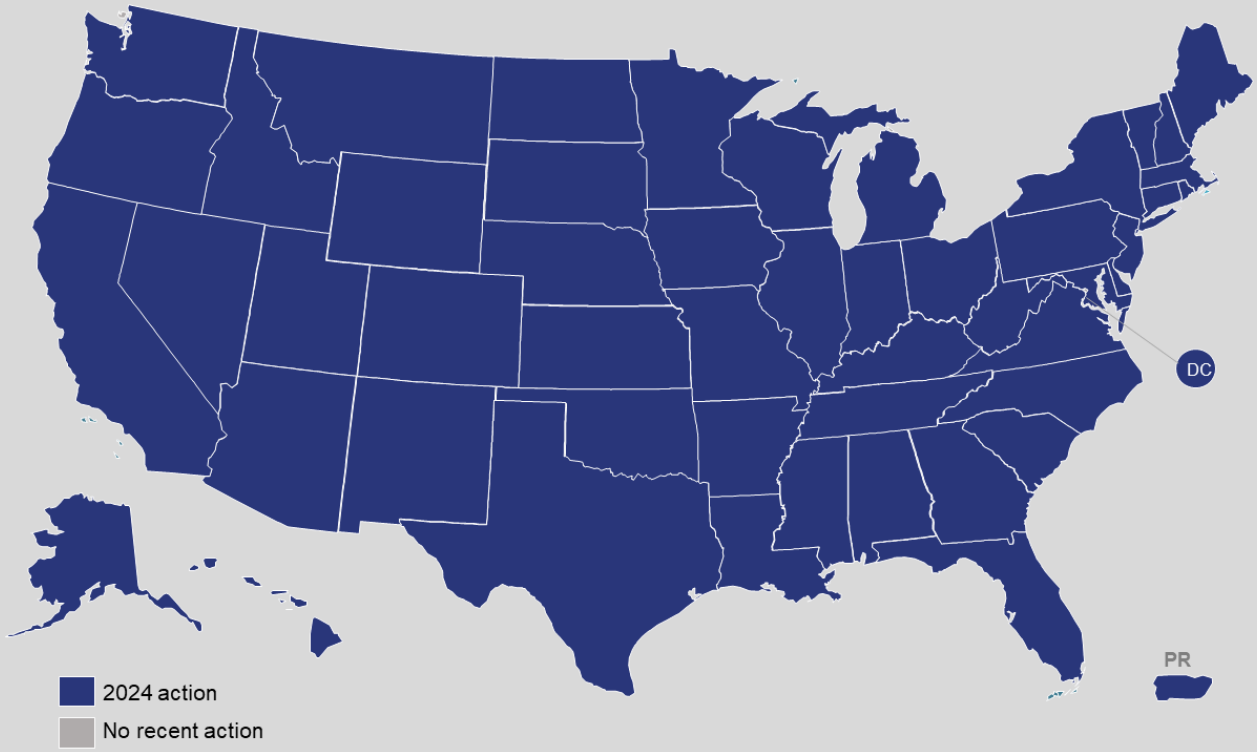
Vermont legislators overrode the Governor's veto of a bill establishing a requirement for 100% renewable energy by 2030 for investor-owned utilities and by 2035 for single-customer and municipal utilities. The bill also added two new sub-category targets – new renewable energy and load growth – with the 2035 targets based on the size of a utility. Meanwhile, Green Mountain Power filed its 2024 integrated resource plan.

Virginia

The Virginia Joint Legislative Audit and Review Commission released a report on data center activity in the state, noting that while they have a positive economic impact, the increased demand could lead to higher energy costs for ratepayers; regulators are also investigating possible tariffs for data center customers. Dominion Energy filed its 2024 integrated resource plan, while

lawmakers enacted legislation making additional technologies eligible under the renewable portfolio standard.

Figure 4. 2024 Action on Power Decarbonization and Resource Planning



Massachusetts

The Massachusetts Department of Energy Resources, in conjunction with Connecticut and Rhode Island, completed a joint offshore wind solicitation, selecting over 2.5 GW across three projects. A new Decarbonizing the Peak Working Group began investigating pathways to reduce fossil fuel reliance in relation to peaker plants and combined heat and power facilities. Legislators also passed an expansive climate bill, amending the state's renewable portfolio standard's eligible technologies and creating new storage targets.

Washington

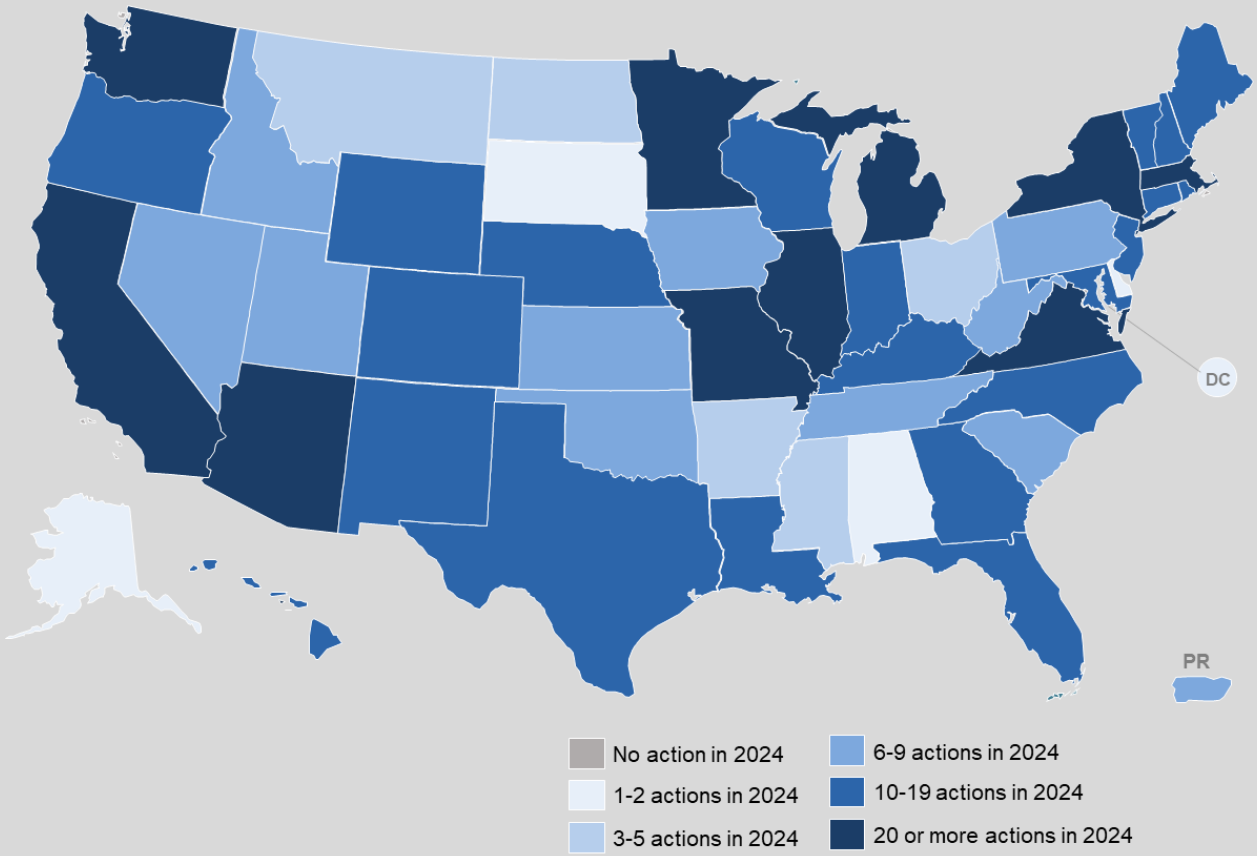
Washington residents voted against a proposed ballot initiative that would have blocked implementation of the state's carbon cap-and-invest program. State lawmakers enacted legislation that integrates fusion energy into state clean energy policies, as well as a bill requiring

large combination utilities to achieve an annual demand response and demand flexibility target of 10%. Meanwhile, Pacific Power and Avista Utilities filed their 2025 draft integrated resource plans.

California

The California Public Utilities Commission approved 2024 renewable portfolio standard procurement plans from multiple utilities and issued decisions in its resource adequacy proceeding, while the California Energy Commission released a strategic plan for offshore wind development. Pacific Gas & Electric filed a new tariff specifically for transmission level customers, due to an increase in data centers and other large customers.

Figure 5. 2024 Action on Power Decarbonization and Resource Planning, by Number of Actions



Rhode Island

Rhode Island regulators approved a new annual long-term contracting RFP for RI Energy, allowing offshore wind and 30-year contracts. The state also selected 200 MW of offshore wind from a joint solicitation with Connecticut and Massachusetts, while legislators passed a bill

establishing capacity targets and procurement processes for energy storage. The Public Utilities Commission also released a report on the interaction of voluntary renewable energy certificates and renewable portfolio standard compliance.

Figure 6. Most Active States of 2024

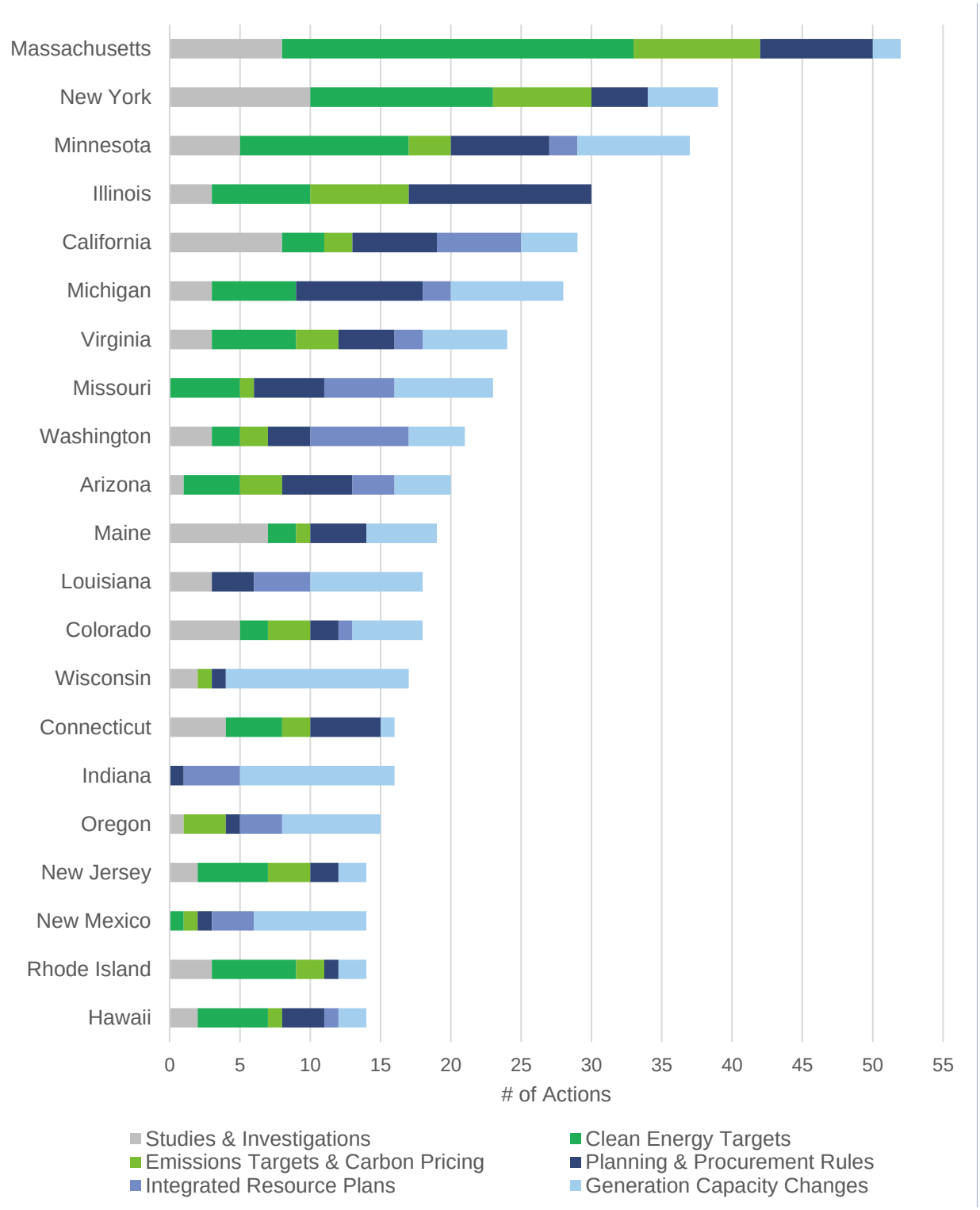
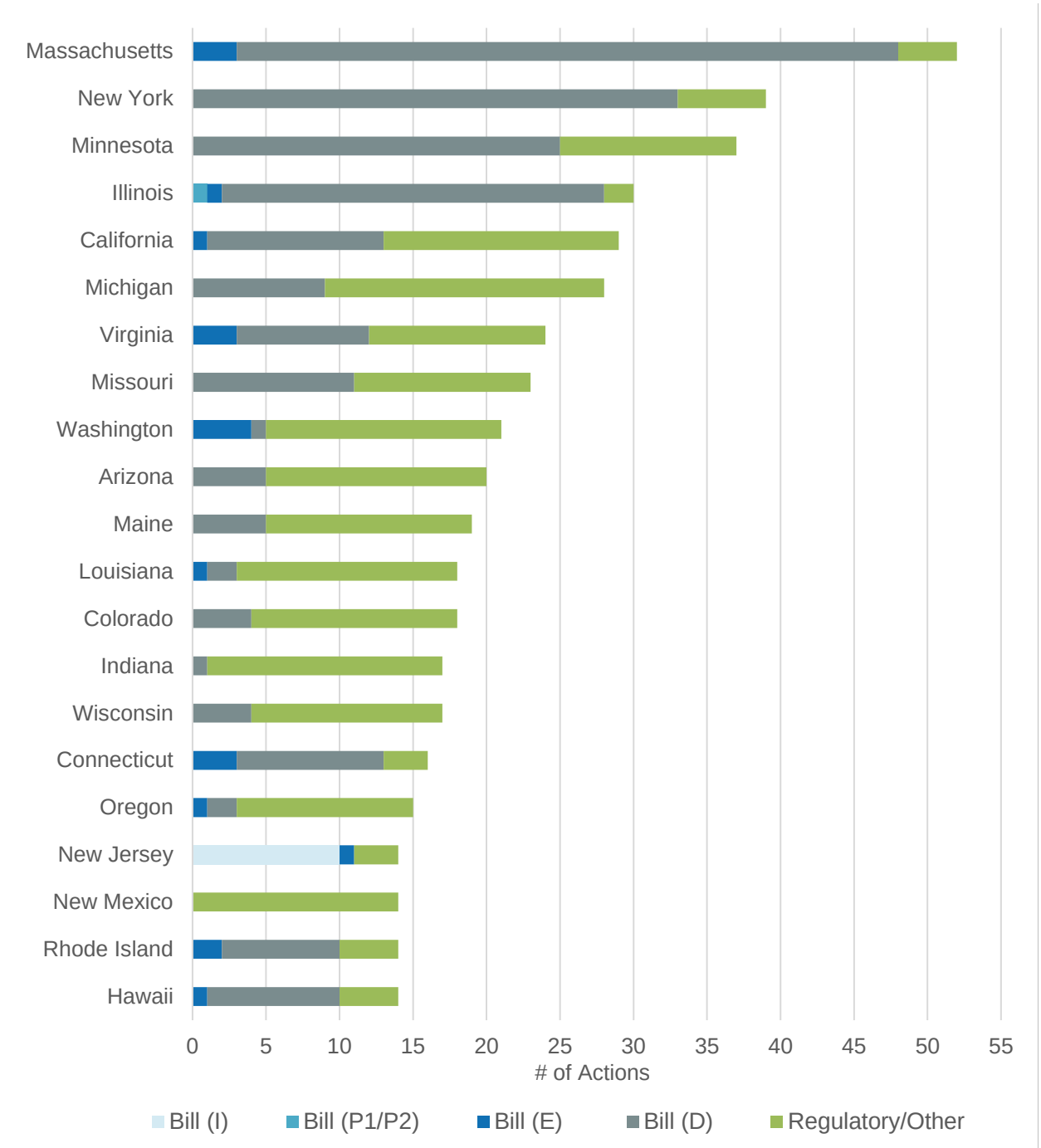


Figure 7. Most Active States of 2024, by Action Status



Nevada

NV Energy filed, and received approval for, its 2024 integrated resource plan, including over 1 GW of solar, 1 GW of storage, and 411 MW of hydrogen-capable natural gas turbines. The utility also filed a new Clean Transition Tariff, which would allow it to sell clean energy to large customers without impacting other ratepayers. State regulators are currently reviewing rule modifications to the integrated resource planning process.

Colorado

The Colorado Public Utilities Commission selected an alternative profile for Xcel Energy's Clean Energy Plan, which decreased the amount of solar, wind, and natural gas, but increased the amount of storage compared to the original plan. The Commission also approved a new 10 MW/1,000 MWh iron-air battery project for Xcel Energy, while various state agencies released reports on geothermal resources, hydrogen, and carbon capture and storage.

Maine

The Maine Governor's Energy Office began developing a procurement process for 3 GW of offshore wind. The Office also released two reports on meeting the state's goal of 100% clean energy by 2040 and on storage procurement, while the Maine Climate Council updated its Maine Won't Wait Plan, which addressed the impacts of climate change on the state and its statutory greenhouse gas reduction targets.

Michigan

Michigan Public Service Commission Staff proposed new integrated resource planning guidelines, which would require investor-owned utilities to provide information on plant retirement, compliance with the state's storage target, and compliance with a utility's renewable energy plan, among other issues. Regulators also began reviewing procurement procedures for utilities to meet the state's storage target, while utilities issued several RFPs for new clean energy capacity.

TOP POWER DECARBONIZATION TRENDS OF 2024

Solar Leads Planned Capacity Additions, While Gas Additions Climb

Utility integrated resource plans (IRPs) under consideration during 2024 collectively included almost 140 GW of new solar capacity, with Florida Power & Light, Duke Energy, and Dominion Energy leading the pack with more than 50 GW of additional solar capacity planned between the three utilities. There was also a significant increase in planned natural gas capacity additions compared to last year, with utilities including over 43 GW more new natural gas generation in their IRPs than in 2023 – a 44% year-over-year increase.

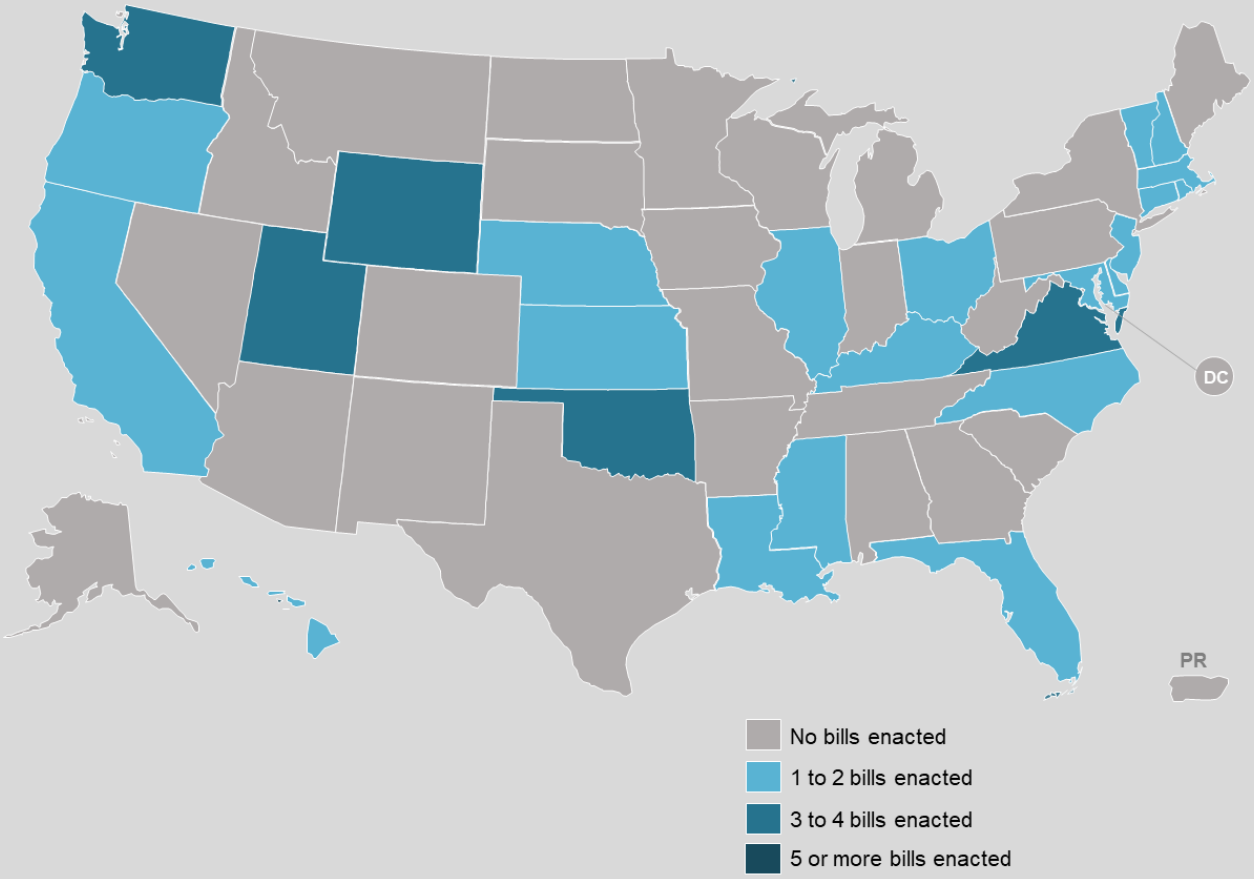
Utilities Tackle Load Growth in Integrated Resource Plans

As energy demand grows, utilities are focusing on load growth in their IRPs, even revising plans in the face of new load projections. In Indiana, NIPSCO proposed certain resources specifically to serve data center load, while New Mexico regulators approved PNM's IRP in April, only for the utility to state in May that it will file a revised plan to account for drastic load increases. In North Carolina and Georgia, Duke Energy and Georgia Power also filed revised IRPs due to increased load forecasts.

States Study Policy Options to Support Advanced Nuclear

Several states initiated or released studies intended to identify options to support advanced nuclear. At the behest of the Governor of Texas, a new advanced nuclear working group released a report outlining benefits and legislative recommendations for advanced nuclear in the state. A working group in Tennessee also released a report with recommendations for legislative, policy, and budgetary changes. Meanwhile, Florida legislators ordered regulators to research potential legislation to enhance advanced nuclear.

Figure 8. Power Decarbonization and Resource Planning Legislation Enacted in 2024



Legislators Impose Stricter Requirements for Power Plant Retirements

Lawmakers in multiple states enacted bills establishing stricter guidelines for electric generation retirements. Kansas legislators enacted a bill preventing regulators from approving retirements unless the utility can prove it has sufficient capacity and it will not negatively affect customers. Kentucky lawmakers prevented coal and gas retirements without regulatory approval, and

Nebraska policymakers ordered electric suppliers to review retirements with the state's Power Review Board.

Utilities Develop Tariffs for Data Center Customers

With increased load from new data centers, utilities are looking to develop specialized tariffs to serve these facilities. California's Pacific Gas & Electric proposed a new tariff specifically for large customers interconnecting at the transmission level. AEP Ohio is seeking approval for data centers to become their own customer class, and Indiana Michigan Power aims to amend its Indiana industrial power tariff to accommodate large load customers like data centers.

Atlantic States Pursue Offshore Wind Procurements

Offshore wind was a popular technology for state-led procurements along the East Coast in 2024. Connecticut, Rhode Island, and Massachusetts issued a joint solicitation, selecting almost 2.9 GW worth of projects. New Jersey regulators opened a request for 1.2 to 4 GW of offshore wind, while regulators in New York are currently reviewing 6.9 GW of RFP responses to its solicitation.

Utilities Propose Hydrogen Blending for New Natural Gas Generation

While utility plans to add natural gas capacity are growing, several utilities are also intending to blend natural gas with hydrogen. Evergy has plans for almost 2.8 GW of hydrogen-capable natural gas across its Kansas and Missouri subsidiaries, while Ameren Missouri included 1.2 GW of combined cycle generation in its IRP that could use either natural gas or hydrogen. The Tennessee Valley Authority is planning up to 19 GW of gas additions with the potential to blend with hydrogen, while Avista Utilities also included plans for hydrogen blending in its draft IRP.

States Encourage Battery Storage Procurement

Several states are expanding requirements for energy storage capacity and procurement efforts. Rhode Island and Massachusetts legislators established new storage targets, while Massachusetts lawmakers mandated that utilities procure new short- and long-term storage, New York regulators approved a framework to help the state reach 6 GW of storage by 2030, and Michigan regulators are developing a plan to achieve the state's new storage target.

States Uphold and Expand Carbon Pricing Mechanisms

Carbon pricing mechanisms have faced pushback in recent years, but states are preserving and even expanding their mechanisms. Washington voters rejected a ballot measure that would have ended the state's cap-and-invest program. Separately, Washington lawmakers strengthened the program by linking it to California and Quebec's shared market. An appeals court judge in Virginia ruled that a 2023 attempt to repeal the state's Regional Greenhouse Gas Initiative regulation was unlawful.

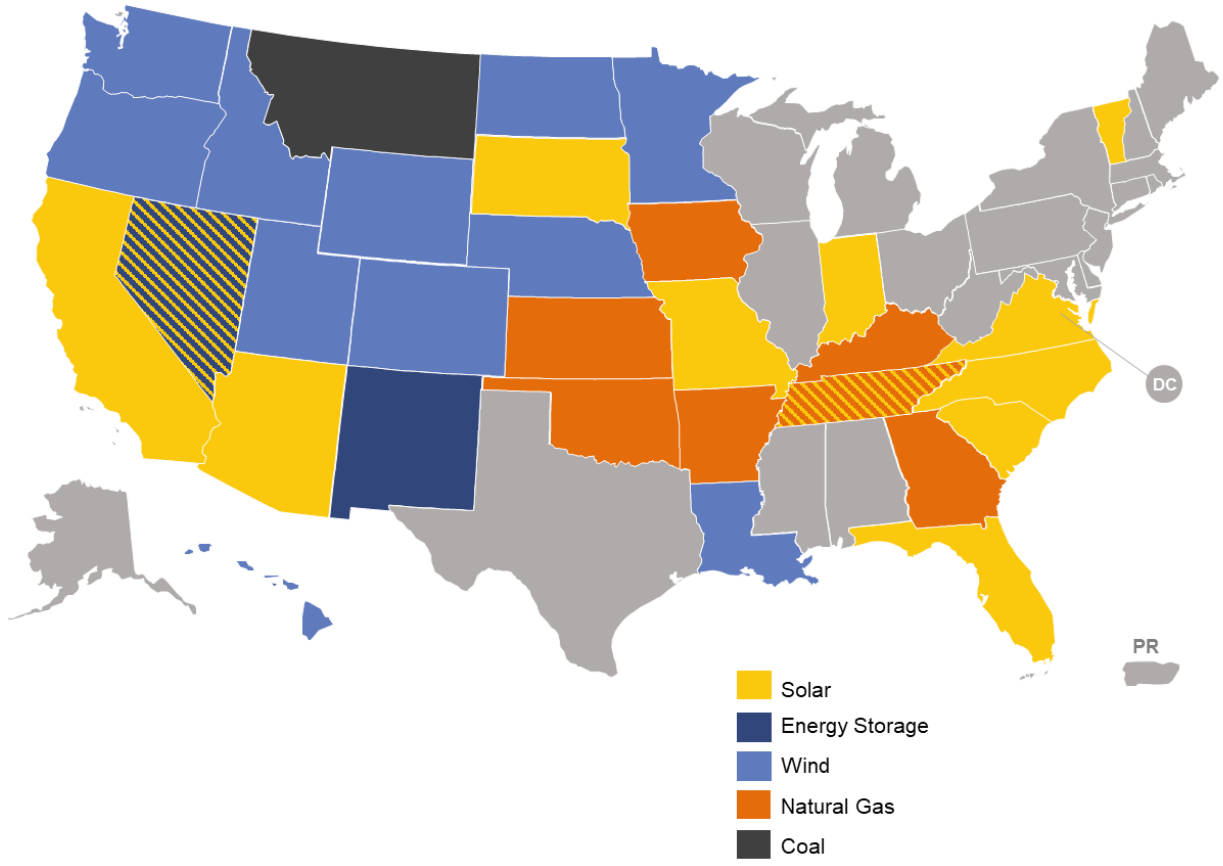
States and Utilities Adopt Policies and Plans Promoting New Nuclear Development

While some states undertook studies in 2024, other states and utilities took more concrete policy and planning steps to promote the development of new nuclear generation. Connecticut lawmakers established a process for multi-state solicitations for nuclear energy, and Massachusetts added nuclear fusion as a renewable portfolio standard-eligible technology. Louisiana regulators proposed a framework to encourage development of advanced nuclear in the state. Several utilities included new nuclear capacity within their IRPs, with a total of 5,385 MW in IRPs under consideration in 2024.

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 2024, planned capacity additions totaled 139,916 MW for solar, 82,826 MW for wind, 77,725 MW for natural gas, and 63,418 for storage, while planned coal retirements totaled 54,317 MW.

Figure 9. 2024 Utility IRP Action, by Largest Planned Resource Addition



Q4 2024 POWER DECARBONIZATION ACTION

In the fourth quarter of 2024, 46 states plus DC and Puerto Rico took a total of 367 actions related to electric power decarbonization and resource planning. Table 2 provides a summary of state and utility actions on these topics. Of the 367 actions tracked, the most common were related to electric generation capacity changes (106), clean energy targets (66), and utility integrated resource plans (61).

Table 2. Q4 2024 Summary of Grid Modernization Actions

Type of Action	# of Actions	% by Type	# of States
Electric Generation Capacity Changes	106	29%	33 + PR
Clean Energy Targets	66	18%	17 + DC
Utility Integrated Resource Plans	61	17%	28 + PR
Planning and Procurement Rules	55	15%	22 + PR
Studies and Investigations	47	13%	21
Emissions Targets & Carbon Policies	32	9%	10
Total	**367**	**100%**	**46 States + DC, 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 Q4 2024

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

Virginia Regulators Investigate Data Center Loads

The Virginia State Corporation Commission began a proceeding to comprehensively study the state's projected load growth from new data centers in October 2024. The Commission will explore potential tariff designs for data centers and what types of costs data center customers should bear. A legislative commission also released a study during the quarter, finding that data centers have positive economic benefits for the economy, but will drive immense load growth, leading to higher energy costs for all customers.

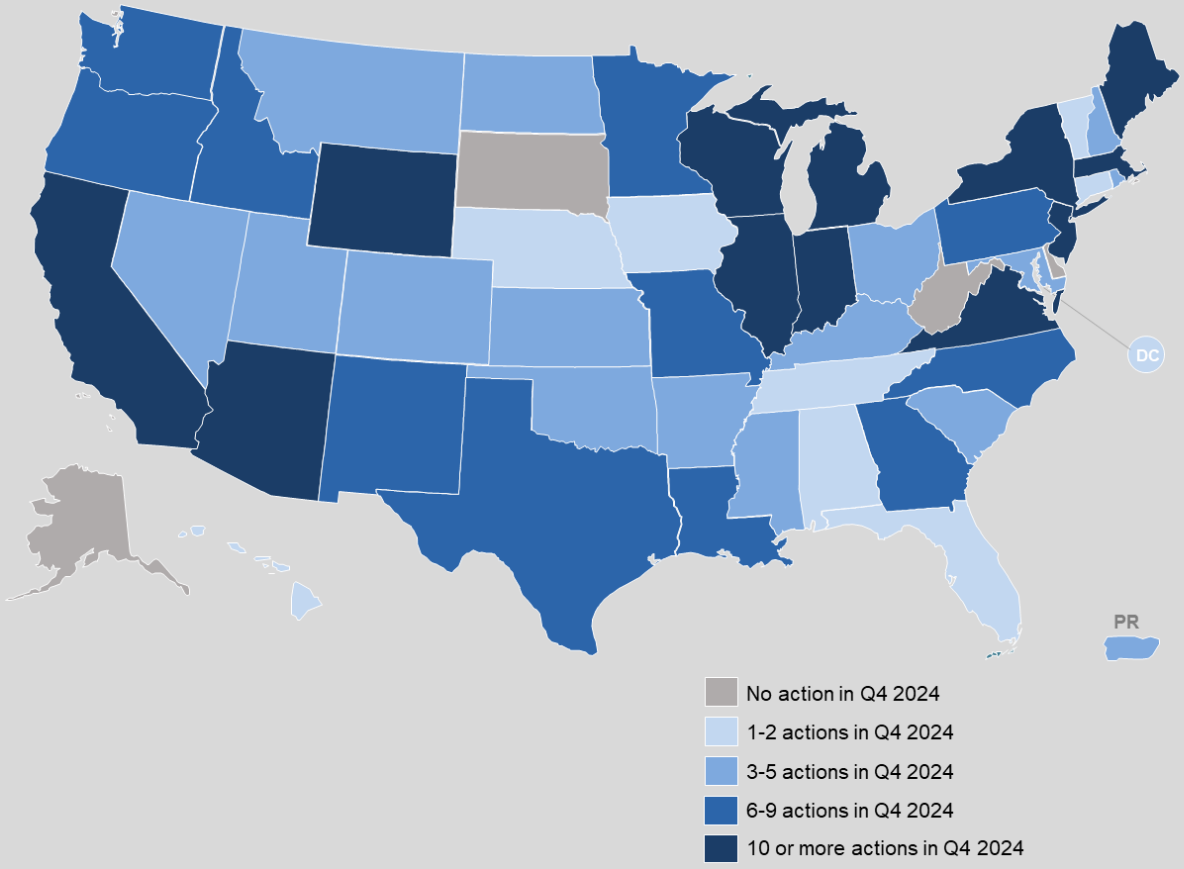
North Carolina Regulators Approve Duke Energy Carbon Plan

The North Carolina Utilities Commission ruled on Duke Energy's Carbon Plan in November 2024, approving the plan with modifications. Duke Energy will deploy a combination of solar, natural gas generation, onshore and offshore wind, pumped hydropower, advanced nuclear, and battery storage. Notably, the Commission ordered that Duke Energy will no longer need to include a resource portfolio that meets the state's interim emission reduction requirement.

Dominion Energy Files Integrated Resource Plan in Virginia and North Carolina

Dominion Energy filed its 2024 integrated resource plan with Virginia and North Carolina regulators during the quarter. Under its portfolio to meet Virginia's statutory requirements, Dominion Energy seeks to deploy almost 12 GW of solar, 4.6 GW of storage, 3.5 GW of wind, and 1.3 GW of nuclear by 2039; however, the utility will cover a majority of its expected load by purchasing over 40 GW of capacity from the PJM wholesale market.

Figure 10. Q4 2024 Action on Power Decarbonization and Resource Planning



Indiana Michigan Power and AEP Ohio Enter Into Settlements Regarding Large Customer Tariffs

Utilities in Indiana and Ohio filed settlement agreements for tariffs to serve new large load customers. Under its settlement, Indiana Michigan Power would expand its existing industrial power tariff to accommodate large load customers, like data centers, and work with stakeholders to develop a green tariff for industrial customers. AEP Ohio would create a new customer class for data centers with a monthly maximum demand over 25 MW.

Massachusetts Legislators Enact Expansive Climate Bill

The Massachusetts Governor signed a wide-ranging climate bill into law in November 2024. The bill expands allows nuclear fusion to qualify under the state's renewable portfolio standard and establishes new capacity targets for energy storage (including sub-targets for mid-duration, long-duration, and multi-day storage). The bill also initiates studies into carbon capture and storage, workforce impacts, and long-term contracting.

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 Q4 2024, planned capacity additions totaled 86,239 MW for solar, 68,557 MW for natural gas, 51,181 MW for wind, and 36,661 MW for storage, while planned coal retirements totaled 45,220 MW.

Figure 11. Q4 2024 Utility IRP Action, by Largest Planned Resource Addition

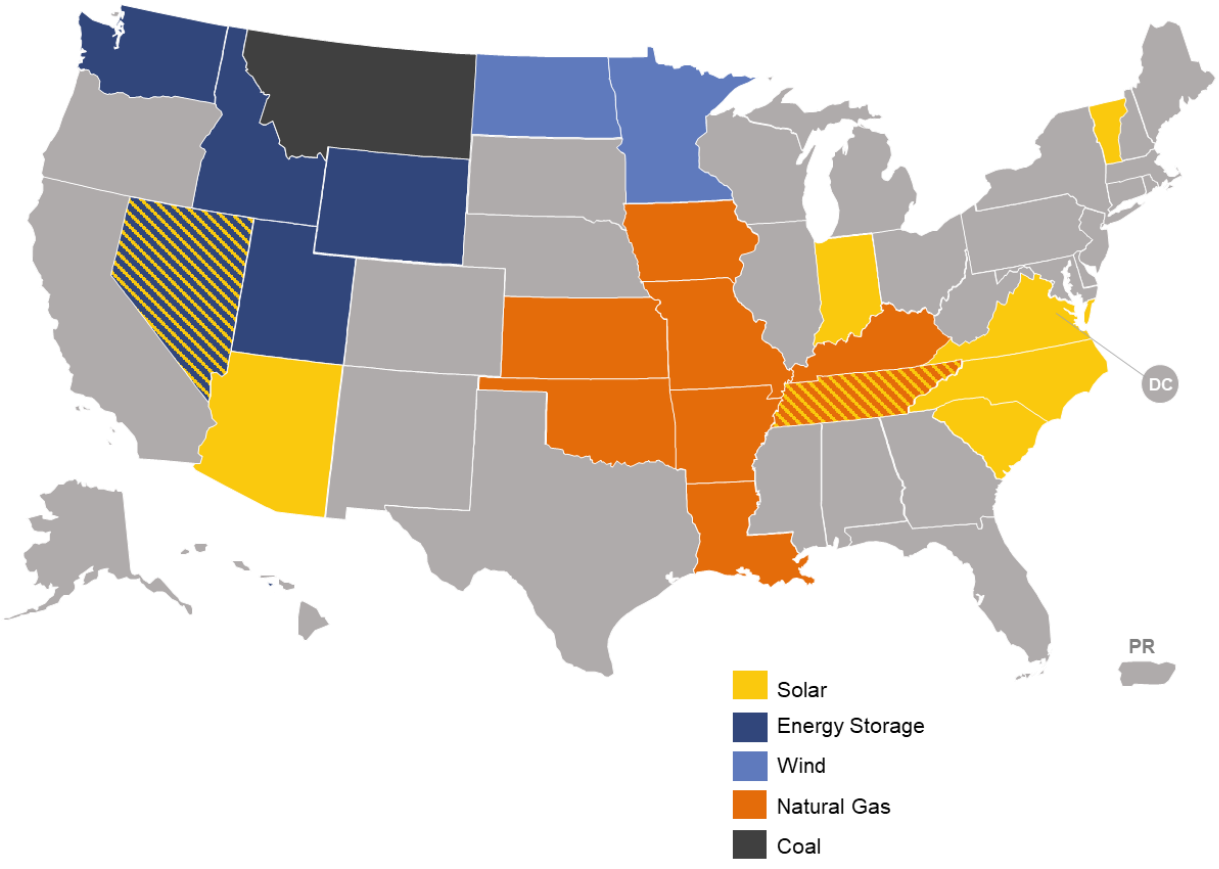
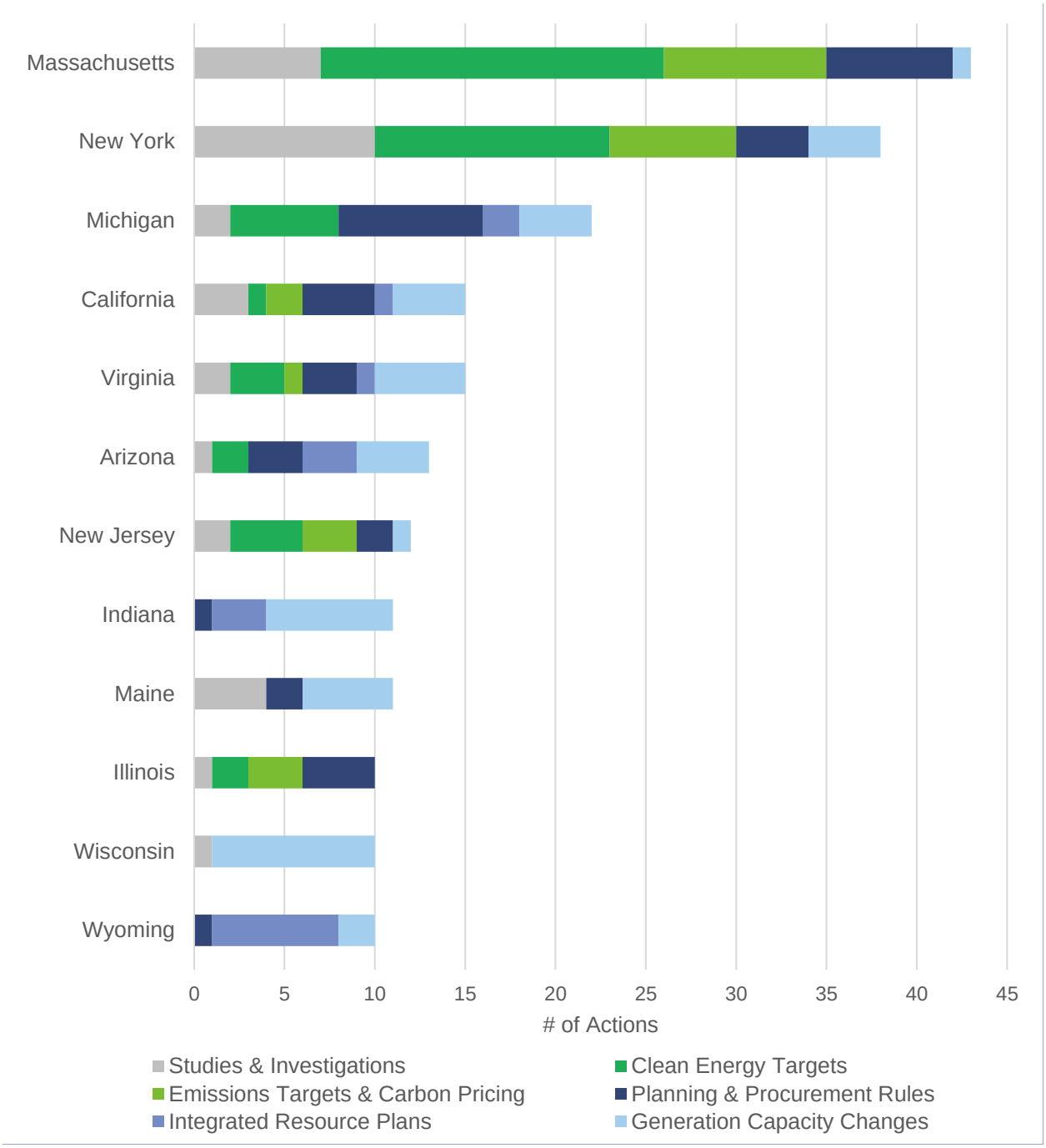


Figure 12. Most Active States of Q4 2024



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