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STATES OF POWER DECARBONIZATION

Q3 2023 Quarterly Report

Executive Summary



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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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PREFERRED CITATION

North Carolina Clean Energy Technology Center, *The 50 States of Power Decarbonization: Q3 2023 Quarterly Report*, November 2023.

COVER DESIGN CREDIT

Cover design by Amira Ferjani and Justin Lindemann

COVER PHOTO CREDIT

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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).

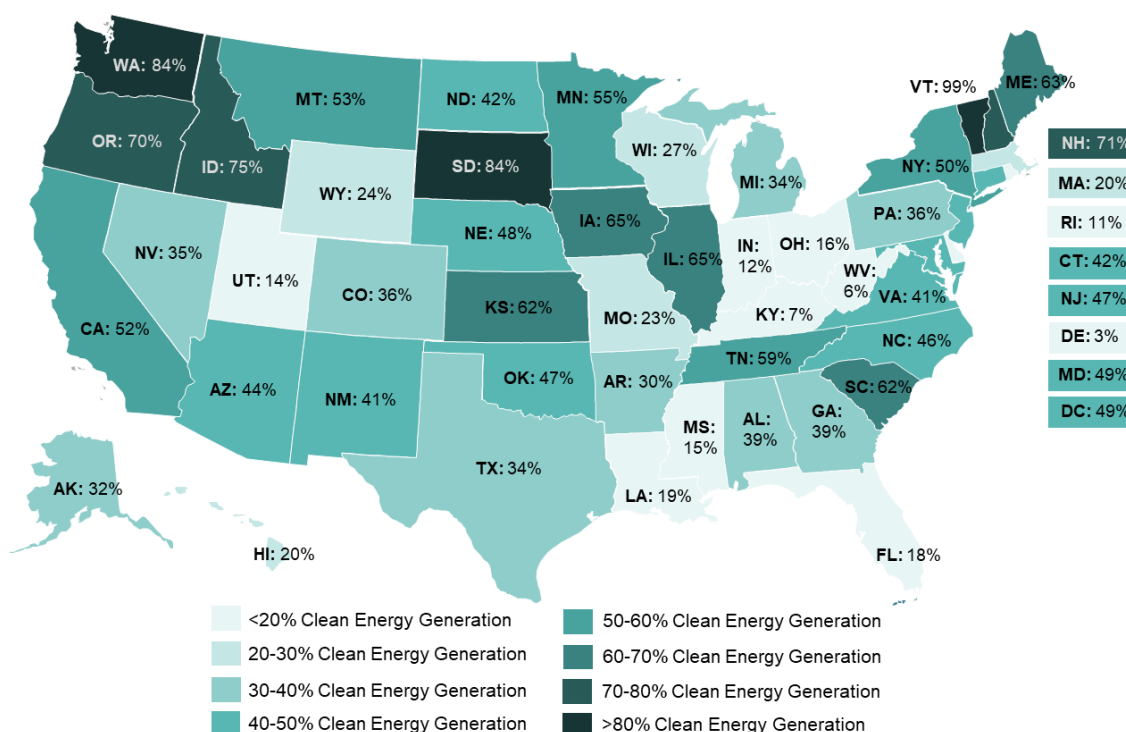
Actions Excluded

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.

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 (2022)



Data Source: U.S. Energy Information Administration – Electric Power Monthly, Net Generation by State by Type of Producer by Energy Source (Jan. – Dec. 2022). 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

Q3 2023 POWER DECARBONIZATION ACTION

In the third quarter of 2023, 48 states plus Puerto Rico took a total of 330 actions related to electric power decarbonization and resource planning. Table 1 provides a summary of state and utility actions on these topics. Of the 330 actions tracked, the most common were related to electric generation capacity changes (77), clean energy targets (73), and utility integrated resource plans (61).

Table 1. Q3 2023 Summary of Grid Modernization Actions

Type of Action	# of Actions	% by Type	# of States
Electric Generation Capacity Changes	77	23%	39 + PR
Clean Energy Targets	73	22%	20
Utility Integrated Resource Plans	61	18%	29 + PR
Planning and Procurement Rules	53	16%	22
Studies and Investigations	35	11%	18
Emissions Targets & Carbon Policies	32	9%	15
Total	330	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 Q3 2023

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

Delaware Lawmakers Establish Net-Zero Emissions Target

Delaware lawmakers enacted legislation in August 2023 establishing a statewide net-zero carbon emissions target to be achieved by 2050, as well as an interim 50% emission reduction target to be achieved by 2030. The bill requires the creation of a statewide climate action plan that will be updated every five years and include recommendations for legislative and regulatory changes needed to meet the state's goals.

Duke Energy Files Latest Carbon Plan in North and South Carolina

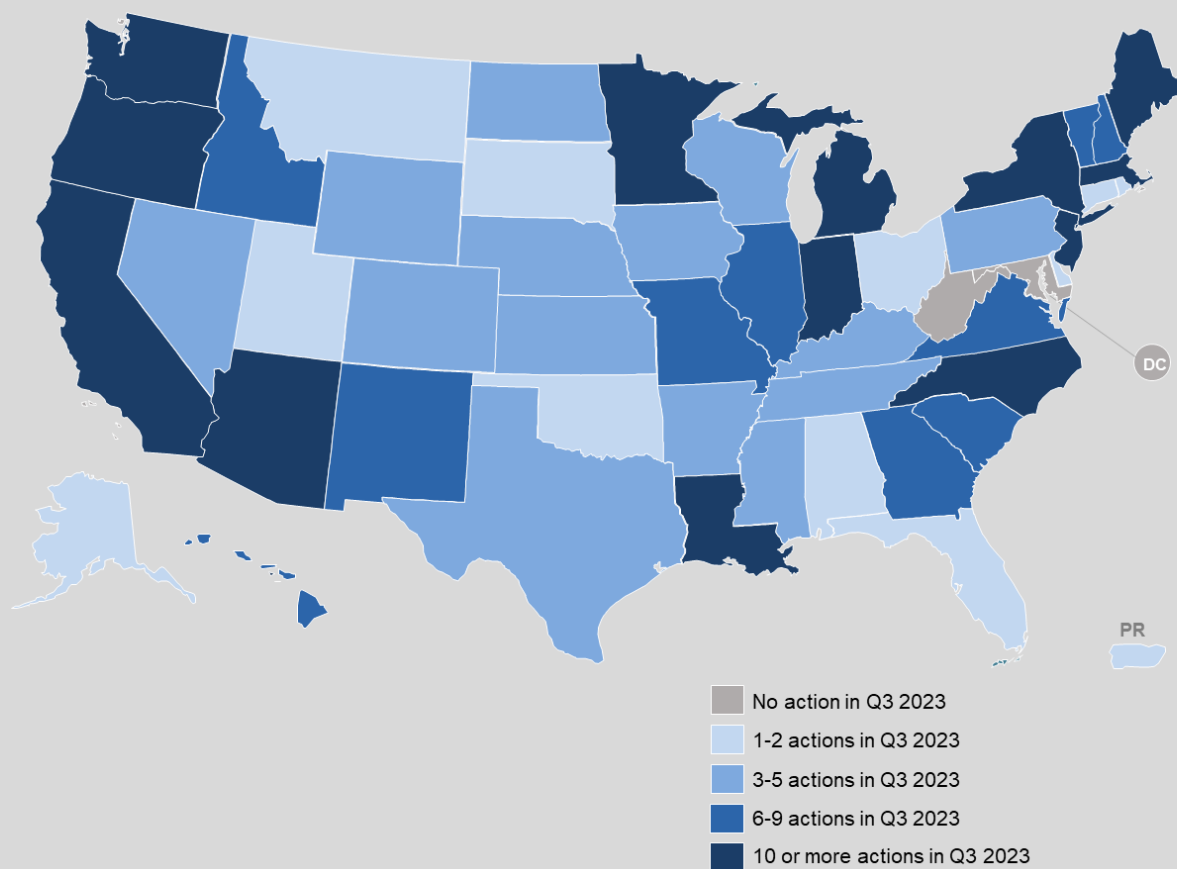
Duke Energy filed its Carbon Plan and Integrated Resource Plan (CPIRP) in North and South Carolina in August 2023. The plan details three energy pathways, with Duke's preferred pathway delaying achievement of the state's interim carbon reduction target by five years. The

preferred pathway includes a variety of generation additions, including solar, storage, hydrogen-capable natural gas plants, wind, advanced nuclear, and pumped hydro.

Michigan Regulators Accelerate Renewable Energy Additions in DTE Integrated Resource Plan

The Michigan Public Service Commission issued an order on DTE Electric’s integrated resource plan in July 2023, which accelerates the procurement of 400 MW of renewables from 2032 to 2026 or 2027. The order also increases the amount of storage the utility will add, increases the distributed generation cap, and approves accelerated coal plant retirement.

Figure 4. Q3 2023 Action on Power Decarbonization and Resource Planning



Illinois Governor Vetoes Legislation Lifting Moratorium on New Nuclear

In August 2023, the Governor of Illinois vetoed legislation that would have lifted the state’s moratorium on the construction of new nuclear reactors until a permanent waste storage site is available. The bill would have allowed the development of new advanced nuclear reactors specifically, as defined by federal law. A motion to override the veto was filed in October 2023.

Utilities Planning to Add Hydrogen-Capable Generation

Several utilities are including the addition of generating units capable of using hydrogen as a fuel source as part of their integrated resource plans (IRPs). Idaho Power filed its latest IRP in Idaho and Oregon in September 2023, which includes the addition of 340 MW of hydrogen-fueled capacity in 2038. In the Carolinas, Duke Energy's latest carbon plan/IRP includes the addition of hydrogen-capable natural gas plants, with the assumption that hydrogen fuel blending will begin in 2035. In Washington, Puget Sound Energy is planning to add 1,588 MW of clean peaking capacity by 2045, which will be fueled by hydrogen or biodiesel. Several utility IRPs also include clean dispatchable generation capacity additions that will use a to-be-determined fuel source. These plans typically reference hydrogen or ammonia as potential resources to fill this need. For example, Avista Utilities estimates a need for 696 MW of renewable-fueled combustion turbines, assuming the fuel will be purchased within a future hydrogen/ammonia fuel market.

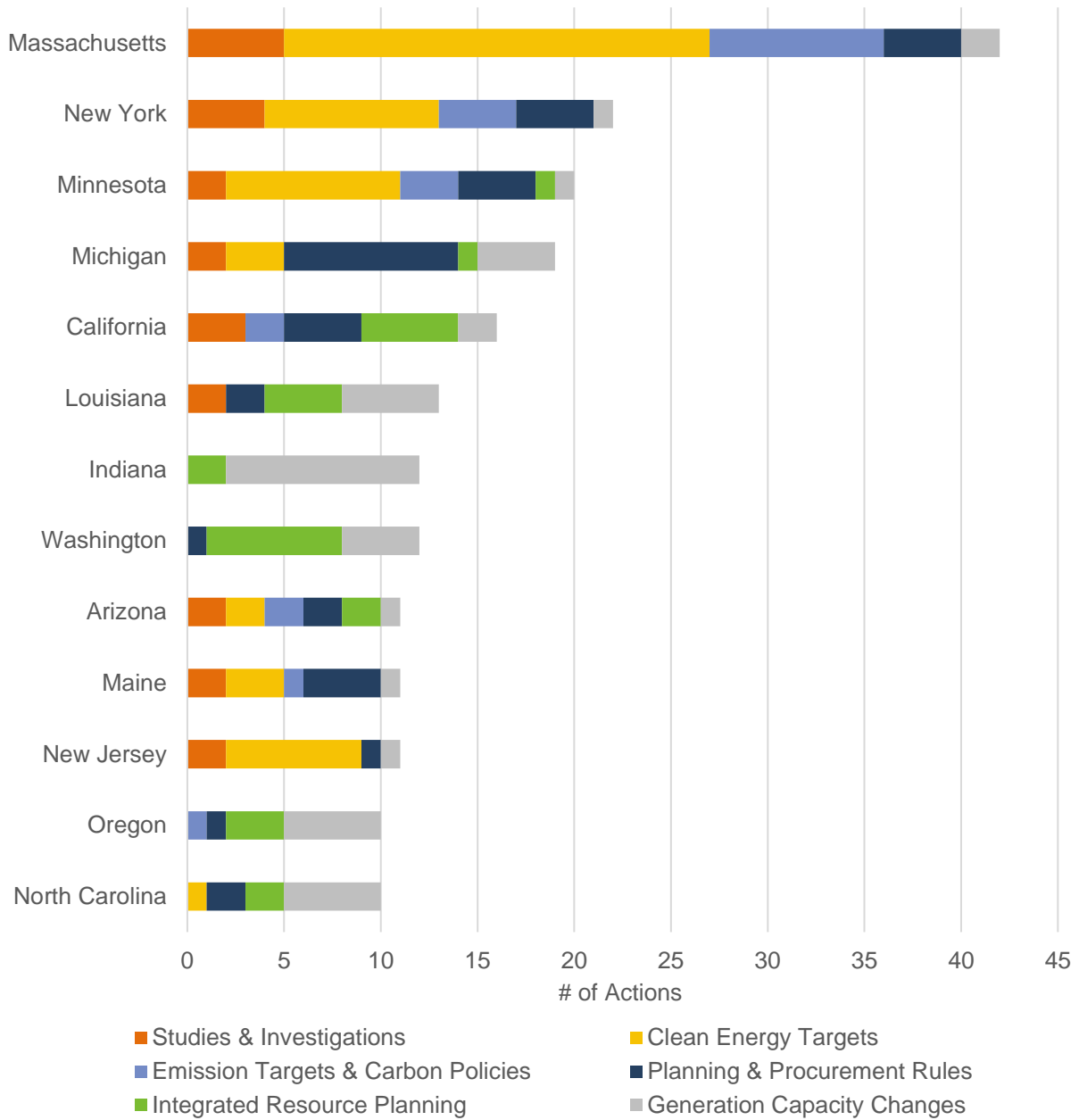
States Studying and Pursuing Multi-Sector Decarbonization Strategies

Many states are studying and pursuing multi-sector decarbonization plans, as opposed to limiting these efforts to individual sectors like power generation, buildings, or transportation. In Delaware, lawmakers enacted legislation adopting statewide greenhouse gas emission reduction targets and requiring the development of a climate action plan to achieve these reductions. State energy offices in Colorado and Hawaii are currently studying pathways to achieve economy-wide decarbonization goals, while the Maine Governor's Energy Office launched its Maine Energy Plan: Pathway to 2040 effort to develop strategies to achieve 100% clean energy in the state by 2040. The Tennessee Valley Authority is also studying decarbonization pathways in partnership with the University of Tennessee; the draft study structure includes sector strategies to reach net-zero emissions by 2050.

Offshore Wind Procurement Continues, While Some Projects Face Challenges

Although several states advanced new or increased offshore wind procurement targets this year, offshore wind development has also faced some recent challenges. In Rhode Island, RI Energy announced in July 2023 that it would not move forward with the single bid submitted to its 2022 offshore wind solicitation. In Massachusetts, the contracts for two previously-selected offshore wind bids were rescinded during Q3 2023. However, the project developers, Avangrid and SouthCoast Wind, plan to re-bid the projects at higher costs and do not intend to cancel the projects. In late October 2023, Orsted announced that it would be canceling two offshore wind projects planned off the coast of New Jersey. Despite these challenges, offshore wind RFPs recently opened in Connecticut, Massachusetts, and Rhode Island, while three projects were provisionally accepted in New York's latest solicitation, totaling 4,032 MW.

Figure 6. Most Active States of Q3 2023



FULL REPORT PRICING DETAILS

Full editions of the 50 States of Power Decarbonization are available for purchase [here](#) at a cost of \$500 for a single issue and \$1,500 for an annual subscription. A 20% subscription discount is available to non-profit, government, and education customers. An annual subscription to the 50 States of Power Decarbonization report can be added on to any other DSIRE Insight subscription (see options below) at a cost of \$1,200.

Complimentary copies are available for policymakers and regulators (limited to federal and state legislators and staffers, utility commissioners, utility commission staff, state consumer advocate office staff, and state energy office staff). [Contact us](#) to receive a complimentary copy of the most recent report.

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