

50

STATES OF

GRID MODERNIZATION

Q2 2024 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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Full editions of and annual subscriptions to the 50 States of Grid Modernization may be purchased [here](#).

The 50 States of Grid Modernization is a quarterly publication. Previous executive summaries and older full editions of *The 50 States of Grid Modernization* are available [here](#).

In addition to *The 50 States of Grid Modernization*, the NC Clean Energy Technology Center publishes additional quarterly reports called *The 50 States of Solar*, *The 50 States of Electric Vehicles*, and *The 50 States of Power Decarbonization*. These reports may be purchased at [here](#). Executive summaries and older editions of these reports are available for download [here](#).

ABOUT THE REPORT

WHAT IS GRID MODERNIZATION?

Grid modernization is a broad term, lacking a universally accepted definition. In this report, the authors use the term grid modernization broadly to refer to actions making the electricity system more resilient, responsive, and interactive. Specifically, in this report grid modernization includes legislative and regulatory actions addressing: (1) smart grid and advanced metering infrastructure, (2) utility business model reform, (3) regulatory reform, (4) utility rate reform, (5) energy storage, (6) microgrids, and (7) demand response.

PURPOSE

The purpose of this report is to provide state lawmakers and regulators, electric utilities, the advanced energy industry, and other energy stakeholders with timely, accurate, and unbiased updates about how states are choosing to study, adopt, implement, amend, or discontinue policies associated with grid modernization. This report catalogues proposed and enacted legislative, regulatory, and rate design changes affecting grid modernization during the most recent quarter.

The 50 States of Grid Modernization report series provides regular quarterly updates and annual summaries of grid modernization policy developments, keeping stakeholders informed and up to date.

APPROACH

The authors identified relevant policy changes and deployment proposals 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 the changing U.S. electric grid:

- How are states adjusting traditional utility planning processes to better allow for consideration of advanced grid technologies?
- What changes are being made to state regulations and wholesale market rules to allow market access for distributed energy resources?
- How are states and utilities reforming the traditional utility business model and rate designs?

- What policy actions are states taking to grow markets for energy storage and other advanced grid technologies?
- Where and how are states and utilities proposing and deploying advanced grid technologies, energy storage, microgrids, and demand response programs?

Actions Included

This report focuses on cataloguing and describing important proposed and adopted policy changes related to grid modernization and distributed energy resources, *excluding policies specifically intended to support only solar technologies*. While some areas of overlap exist, actions related to distributed solar policy and rate design are tracked separately in the *50 States of Solar report series*, and are generally not included in this report.

In general, this report considers an “action” to be a relevant (1) legislative bill that has been introduced or (2) a regulatory docket, utility rate case, or rulemaking proceeding. Only statewide actions and those related to investor-owned utilities are included in this report. Specifically, actions tracked in this issue include:

Studies and Investigations

Legislative or regulatory-led efforts to study energy storage, grid modernization, utility business model reform, or alternative rate designs, e.g., through a regulatory docket or a cost-benefit analysis.

Planning and Market Access

Changes to utility planning processes, including integrated resource planning, distribution system planning, and evaluation of non-wires alternatives, as well as changes to state and wholesale market regulations enabling market access.

Utility Business Model and Rate Reform

Proposed or adopted changes to utility regulation and rate design, including performance-based ratemaking, decoupling, time-varying rates, and residential demand charges.

Grid Modernization Policies

New state policy proposals or changes to existing policies related to grid modernization, including energy storage targets, energy storage compensation rules, interconnection standards, and customer data access policies.

Financial Incentives for Energy Storage and Advanced Grid Technologies

New statewide incentives or changes to existing incentives for energy storage, microgrids, and other modern grid technologies.

Deployment of Advanced Grid Technologies

Utility-initiated requests, as well as proposed legislation, to implement demand response programs or to deploy advanced metering infrastructure, smart grid technologies, microgrids, or energy storage.

Actions Excluded

This report excludes utility proposals for grid investments that do not include any specific grid modernization component, as outlined above, as well as specific projects that have already received legislative or regulatory approval. Actions related exclusively to pumped hydroelectric storage or electric vehicles are not covered by this report (a separate report series available from the NC Clean Energy Technology Center covers electric vehicle actions). Time-varying and residential demand charge proposals are only documented if they are being implemented statewide, the default option for all residential customers of an investor-owned utility, or a notable pilot program. Actions related to inclining or declining block rates are not included in this report. While actions taken by municipal utilities and electric cooperatives are not comprehensively tracked in this report, particularly noteworthy or high-impact actions are included. The report also excludes changes to policies and rate design for distributed generation customers; these changes are covered in the 50 States of Solar quarterly report.

EXECUTIVE SUMMARY

Q2 2024 GRID MODERNIZATION ACTION

In the second quarter of 2024, 47 states plus DC and Puerto Rico took a total of 576 policy and deployment actions related to grid modernization, utility business model and rate reform, energy storage, microgrids, and demand response. Table 1 provides a summary of state and utility actions on these topics. Of the 576 actions catalogued, the most common were related to policies (141), financial incentives (109), and utility business model and rate reform (97).

Table 1. Q2 2024 Summary of Grid Modernization Actions

Type of Action	# of Actions	% by Type	# of States
Policies	141	24%	30 + PR
Financial Incentives	109	19%	38 + PR
Business Model and Rate Reform	97	17%	35 + PR
Deployment	86	15%	34 + PR
Studies and Investigations	74	13%	25 + DC, PR
Planning and Market Access	69	12%	24 + DC, PR
Total	576	100%	47 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 GRID MODERNIZATION DEVELOPMENTS OF Q2 2024

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

Colorado Lawmakers Enact Virtual Power Plant and Distribution System Planning Legislation

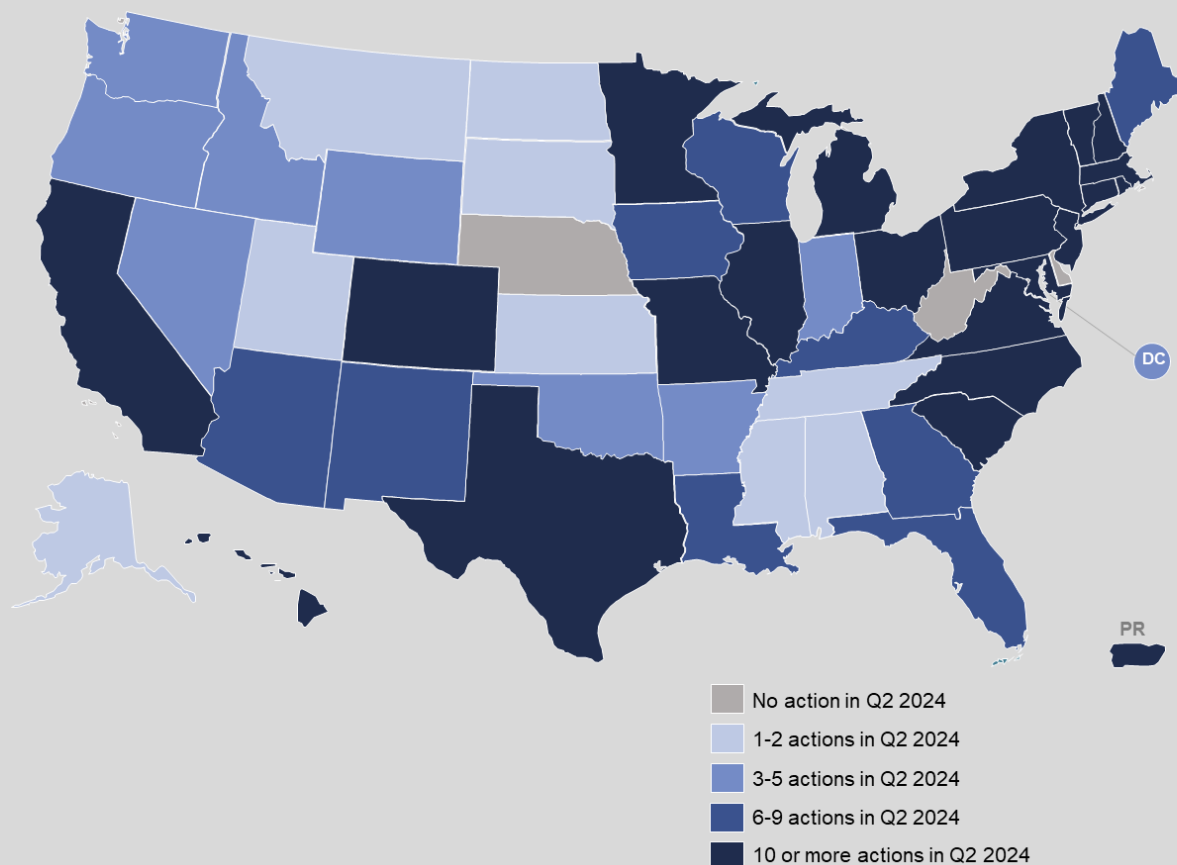
Colorado lawmakers enacted legislation in May 2024 requiring Xcel Energy to propose virtual power plant programs and a tariff for performance-based compensation by February 2024. The bill also requires the utility to identify interconnection and load hosting capacity for distributed energy resources in disproportionately impacted communities and file a five-year distribution system plan to create sufficient hosting capacity across its system.

New York Public Service Commission Opens Grid of the Future Proceeding

The New York Public Service Commission opened a “Grid of the Future” proceeding in April 2024 to help achieve the state’s renewable energy goals through flexible resources. The proceeding will involve a grid flexibility study and will identify near-term actions to increase the

deployment and use of flexible resources, as well as improved integration of these resources in planning and grid operations.

Figure 1. Q2 2024 State and Utility Action on Grid Modernization



Texas Utilities File Transmission and Distribution System Resiliency Plans

Three Texas utilities – Oncor, CenterPoint, and Entergy – filed their three-year transmission and distribution system resiliency plans in Q2 2024. The plans include a variety of grid resilience investments, such as grid hardening, undergrounding, vegetation management, self-healing systems, wildfire mitigation, and cybersecurity improvements. Oncor’s plan includes \$3.412 billion in investment, while CenterPoint’s plan totals \$2.2776 billion, and Entergy’s plan costs \$335.1 million.

Rhode Island Legislators Adopt Energy Storage Target

Rhode Island became the latest state to adopt an energy storage target, with lawmakers enacting legislation in June 2024. The legislation sets a target of 600 MW of energy storage by 2034, with interim targets of 90 MW by 2027 and 195 MW by 2029. The Rhode Island

Infrastructure Bank will be able to use various funding sources to develop programs to meet these goals, including programs supporting standalone storage and behind-the-meter distributed generation paired with storage.

New Hampshire Lawmakers Pass Microgrid Study and Grid Planning Legislation

In New Hampshire, state lawmakers passed legislation adopting requirements for utilities to submit integrated distribution plans, including evaluation of non-wires solutions. Legislators also passed a bill directing the state's Department of Energy to conduct a study of the potential benefits and risks of developing a microgrid framework, as well as recommendations for a microgrid framework.

MOST ACTIVE STATES AND SUBTOPICS OF Q2 2024

The most common types of actions across the country related to energy storage deployment (55), utility business model reforms overall (50), distribution system planning rules (28), interconnection rules (28), performance-based regulation (28), and time-varying rates (26).

The states taking the greatest number of actions related to grid modernization in Q2 2024 can be seen in Figure 4. New York, Massachusetts, Michigan, California, New Jersey, and Minnesota saw the most action during the quarter, followed by Connecticut, Illinois, Hawaii, Missouri, Ohio, and New Hampshire. Overall, 47 states, plus DC and Puerto Rico, took actions related to grid modernization in Q2 2024.

TOP GRID MODERNIZATION TRENDS OF Q2 2024

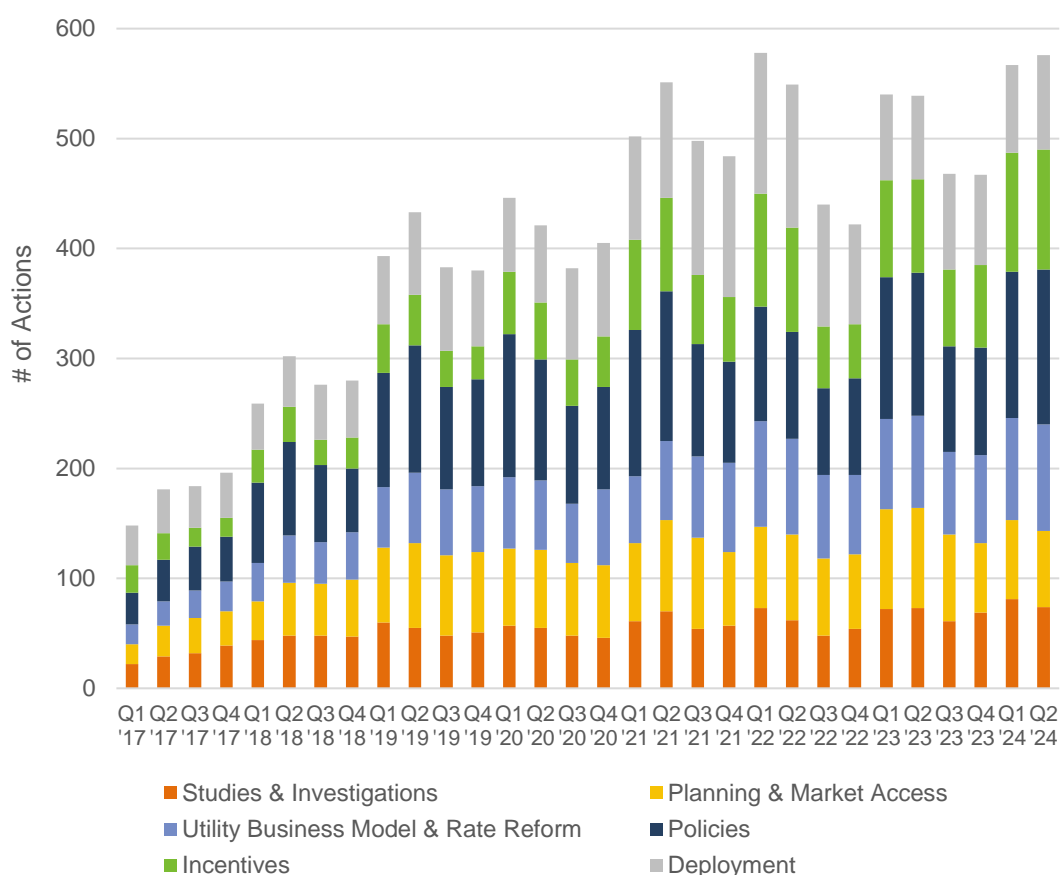
States Addressing Distributed Energy Resource Aggregation in Wholesale Markets

States across the country are investigating and developing frameworks for distributed energy resource (DER) aggregation, also known as virtual power plants. Recently, a number of states have been specifically addressing how aggregated DERs can participate in wholesale electricity markets. In New Jersey, the Board of Public Utilities is compiling information from stakeholders regarding the participation of DER aggregators in wholesale markets under FERC Order 2222. Pennsylvania regulators are similarly considering input on virtual power plants and rule changes necessary to support the implementation of FERC Order 2222. In Michigan, the Public Service Commission is leading a workgroup focused on demand response aggregation issues, including wholesale market participation. Meanwhile, Texas regulators are continuing with a DER aggregation pilot program in ERCOT, and the Wisconsin Court of Appeals addressed a challenge to a policy determination that prevented retail customers from engaging in aggregated demand response activities in wholesale markets.

States Investigating Performance-Based Regulation

While a number of states and utilities are already moving forward with adopting performance incentive mechanisms and other performance-based regulatory tools, other states are in a more investigatory stage, examining the role and potential for performance-based regulation. In Michigan, the Public Service Commission Staff filed a report summarizing activities of its financial incentives and disincentives workgroup and providing a straw proposal. The Oklahoma Corporation Commission’s Public Utility Division filed a report on alternative ratemaking methodologies, including performance-based regulation, generally concluding that these methodologies are not appropriate for the state. Meanwhile, Washington regulators issued a policy statement with interim guidance on performance-based regulation, and Virginia lawmakers passed a resolution calling for a study of performance-based regulatory tools for investor-owned electric utilities.

Figure 2. Total Number of Grid Modernization Actions by Quarter



Utilities Undertaking Grid Resilience Planning

A growing number of utilities are undertaking planning efforts focused on grid resilience. In Texas, three utilities – CenterPoint, Entergy Texas, and Oncor – filed their first grid resilience

plans during Q2 2024, with each utility proposing significant investments to enhance grid resilience. The Iowa Utilities Board is evaluating utilities' summer preparedness and grid resilience plans, and the HECO utilities are working on a natural hazard mitigation report for the Hawaii Public Utilities Commission. In California, regulators opened a new proceeding on rules for the safety, reliability, and resiliency of the electric distribution system, while Louisiana regulators are evaluating Entergy Louisiana's Future Ready Resilience Plan. In Puerto Rico, PREPA, Luma, and Genera must file preliminary plans on system upgrades to mitigate frequent outages and eliminate weak points.

Figure 3. Most Common Types of Actions Taken in Q2 2024

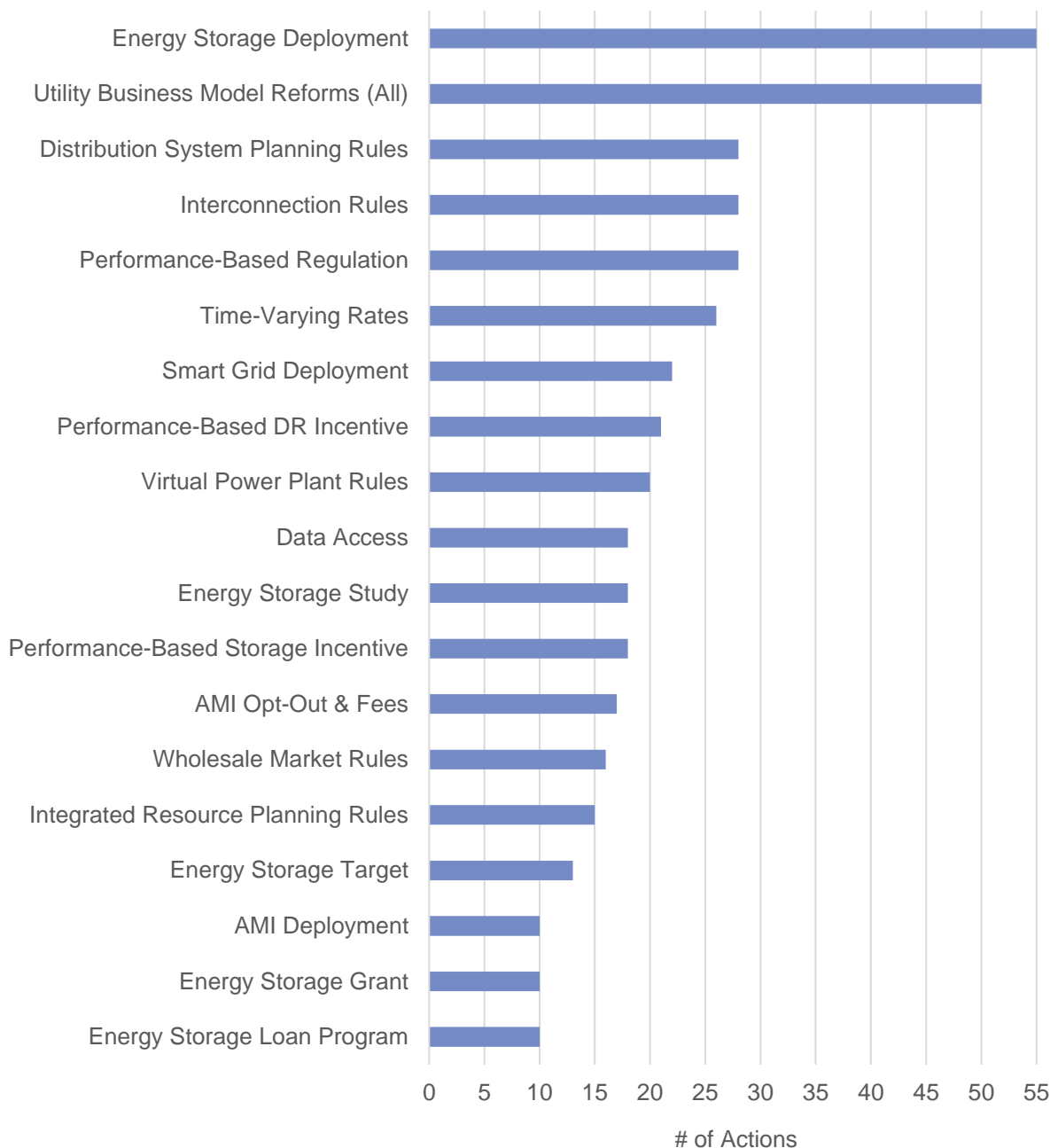


Figure 4. Most Active States of Q2 2024

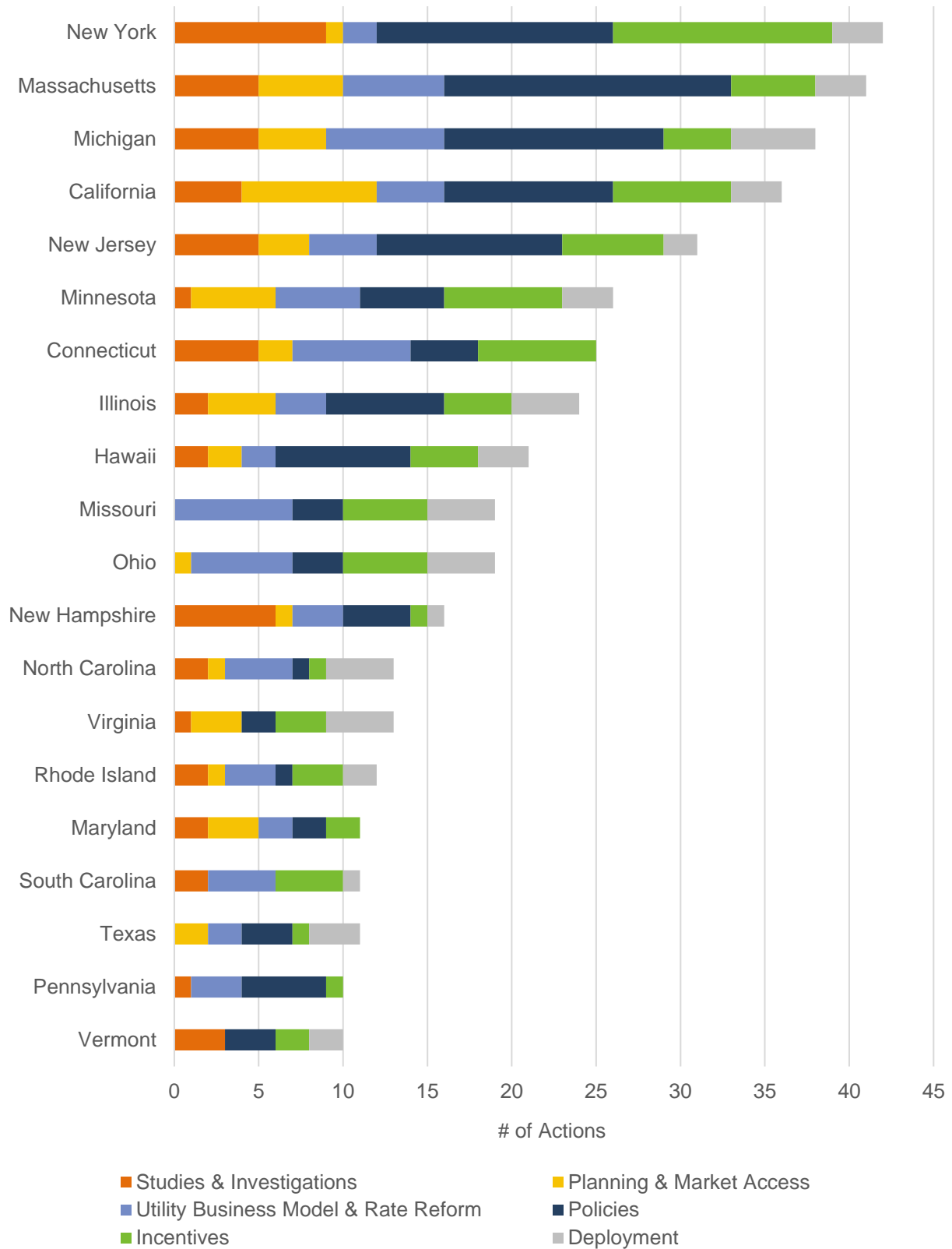
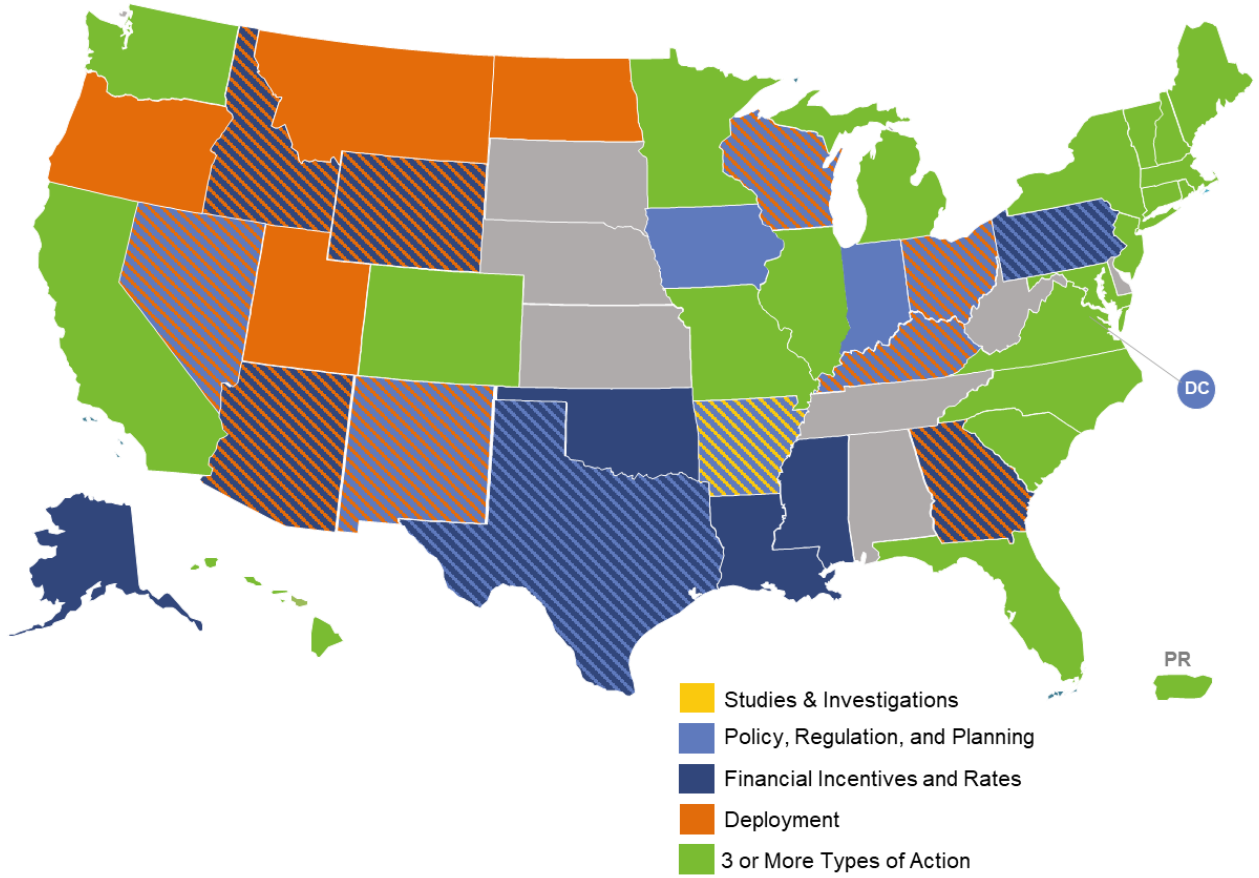


Figure 5. Q2 2024 Energy Storage Action, by Action Type



FULL REPORT DETAILS & PRICING

FULL REPORT DETAILS

Content Included in the Full Quarterly Report:

- Detailed tables describing each pending and recently decided state and utility grid modernization action addressing: (1) smart grid and advanced metering infrastructure, (2) utility business model reform, (3) regulatory reform, (4) utility rate reform, (5) energy storage, (6) microgrids, and (7) demand response. Actions are broken out into the following categories:
 - Studies and Investigations
 - Planning and Market Access
 - Utility Business Model and Rate Reforms
 - Policies
 - Financial Incentives
 - State and Utility Deployment
- Links to original legislation, dockets, and commission orders for each legislative and regulatory action
- Excel spreadsheet file of all actions taken during the quarter and separate Powerpoint file of all summary maps available upon request
- Qualitative analysis and descriptive summaries of grid modernization policy action and trends
- Outlook of action for the next quarter

WHO SHOULD PURCHASE THIS REPORT

The 50 States of Grid Modernization allows those involved in the electric industry to easily stay on top of legislative and regulatory changes. The report provides a comprehensive quarterly review of actions. At a cost of \$500 per issue (or \$1,500 annually), the 50 States of Grid Modernization offers a significant time and financial savings. With direct links to original sources for all actions, customers may stay on top of policy developments between quarterly reports.

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- Access valuable data requiring a vast amount of time to collect first-hand
- Identify research needs to inform grid modernization proceedings
- Cite an objective source in your own research and analysis

PRICING

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