

50

STATES OF

GRID MODERNIZATION

Q3 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

Q3 2024 GRID MODERNIZATION ACTION

In the third quarter of 2024, 45 states plus DC and Puerto Rico took a total of 465 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 465 actions catalogued, the most common were related to policies (110), deployment (92), and utility business model and rate reform (82).

Table 1. Q3 2024 Summary of Grid Modernization Actions

Type of Action	# of Actions	% by Type	# of States
Policies	110	24%	25 + PR
Deployment	92	20%	35 + PR
Business Model and Rate Reform	82	18%	35 + PR
Financial Incentives	69	15%	25 + PR
Studies and Investigations	57	12%	19 + DC, PR
Planning and Market Access	55	12%	21 + DC, PR
Total	465	100%	45 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 Q3 2024

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

Massachusetts Regulators Approve Utility Electric Sector Modernization Plans

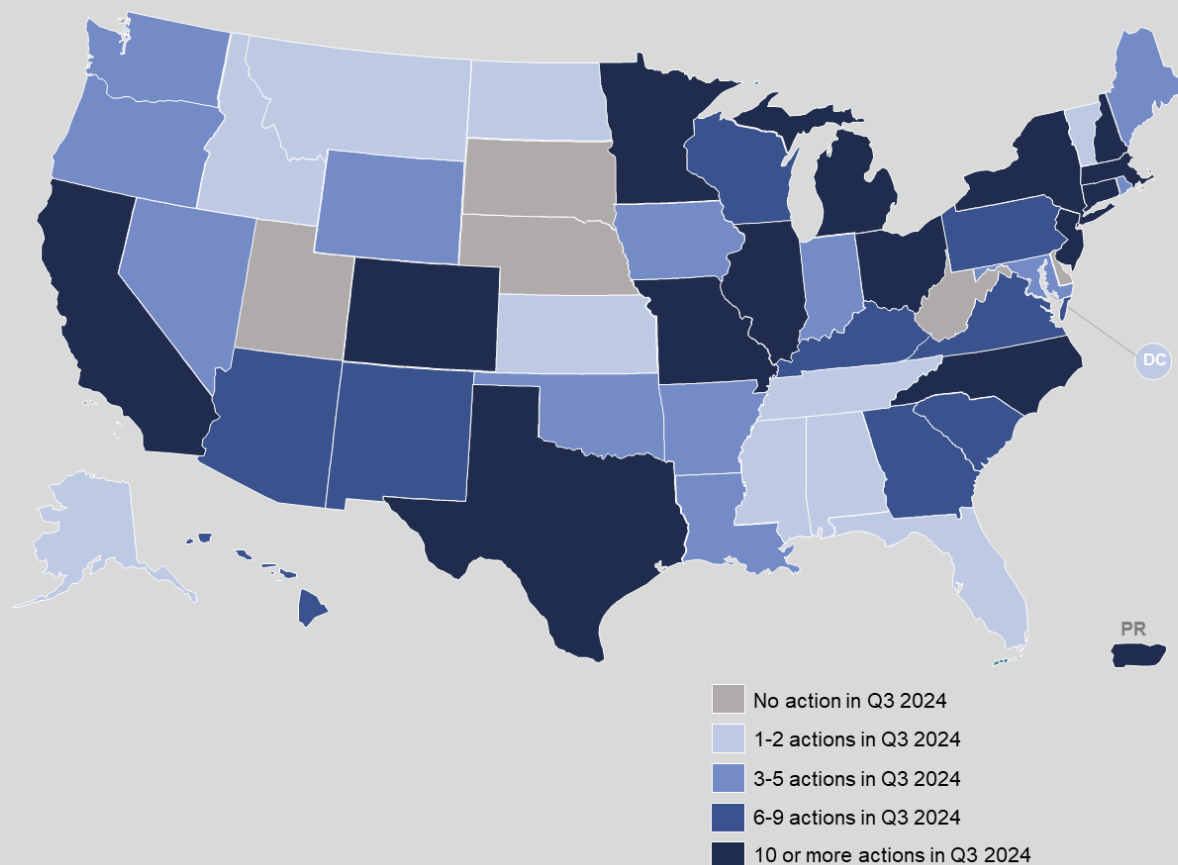
In August 2024, the Massachusetts Department of Public Utilities approved the first electric sector modernization plans filed by Eversource, National Grid, and Unitil. Each plan includes a variety of distribution grid modernization investments, such as advanced distribution management systems, distributed energy resource management systems, resilience upgrades, and non-wires alternatives.

New Jersey Board of Public Utilities Releases Proposed Data Access Rules

The New Jersey Board of Public Utilities released proposed data access standards in September 2024, which would require electric distribution companies to use the Green Button Data Standard to provide customer interval data access. The standards would also require

distribution companies to provide access to authorized third parties and develop a “one-click” web-based release form for authorizing access to customer data.

Figure 1. Q3 2024 State and Utility Action on Grid Modernization



Wisconsin Public Service Commission Opens Virtual Power Plant Investigation

The Wisconsin Public Service Commission began an investigation into aggregation of retail customers for demand response load reduction resources in September 2024. The Commission is seeking input on several questions related to benefits and downsides of retail customer aggregation, compensation for participating customers, and steps to ensure compliance with state law, MISO rules, and FERC Order 2222.

California Lawmakers Enact Legislation Requiring Evaluation of Grid-Enhancing Technologies

California lawmakers enacted legislation in September 2024 that requires transmission utilities to study the feasibility of projects using grid-enhancing technologies that can achieve at least one of the following goals: increasing transmission capacity, reducing transmission system

congestion, reducing curtailment of renewable and zero-carbon resources, increasing reliability, reducing the wildfire risk, increasing capacity to connect new renewable and zero-carbon resources, and increasing flexibility.

Xcel Energy Proposes Distributed Capacity Procurement Process in Minnesota

As part of comments filed with Minnesota regulators on Xcel Energy's 2024-2040 Upper Midwest Resource Plan, the utility proposed a new Distributed Capacity Procurement process, which would be used to integrate distributed energy resources into its system. The program could procure anywhere from 400 MW to over 1 GW of distributed energy resources, depending on system needs. Xcel Energy plans to file a formal application in a separate proceeding in 2025.

MOST ACTIVE STATES AND SUBTOPICS OF Q3 2024

The most common types of actions across the country related to energy storage deployment (60), utility business model reforms overall (44), smart grid deployment (29), interconnection rules (28), performance-based regulation (24), and distribution system planning rules (23).

The states taking the greatest number of actions related to grid modernization in Q3 2024 can be seen in Figure 4. Michigan, New York, Massachusetts, New Jersey, and California saw the most action during the quarter, followed by Ohio, Minnesota, Colorado, New Hampshire, Connecticut, and Texas. Overall, 45 states, plus DC and Puerto Rico, took actions related to grid modernization in Q3 2024.

TOP GRID MODERNIZATION TRENDS OF Q3 2024

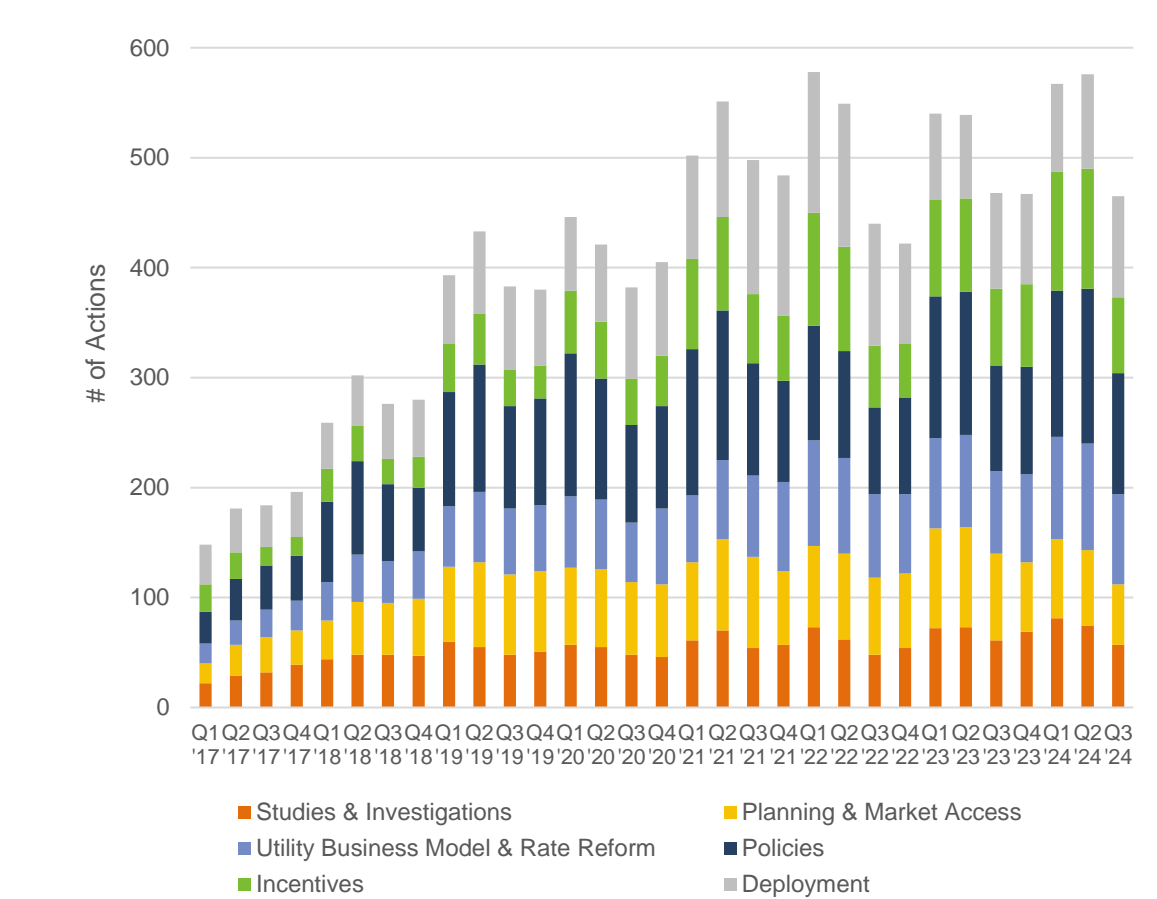
Regulators Evaluating Cost Allocation for Grid Upgrades Needed to Interconnect Distributed Energy Resources

Regulators in several states are evaluating cost allocation approaches for grid upgrades needed to interconnect distributed energy resources (DERs). In Oregon, Portland General Electric proposed modifications to its large qualifying facility interconnection procedures, which would include a transitional cluster study process to move away from the existing serial process. New Hampshire legislators enacted a bill in July 2024, which directs the state's Department of Energy to adopt uniform procedures for DER interconnection, including provisions on cost responsibilities and review processes. The Minnesota Public Utilities Commission opened a new proceeding in August 2024 to establish tariffs for distribution system cost sharing for DER interconnection in constrained areas. Meanwhile, Connecticut regulators directed an interconnection working group to resolve several issues related to DER interconnection, including solutions to insufficient hosting capacity for new resources.

States Considering the Siting and End-of-Life Processes for Battery Storage

Policymakers and regulators in several states have been considering siting, land use, and end-of-life issues related to battery storage. The Connecticut Green Bank filed a report on solar and battery end-of-life considerations, including recommendations to encourage recycling of materials and a five-year implementation plan. The plan would entail a working group, stakeholder engagement, pilot programs, regulation drafting, and long-term strategy development. In Vermont, regulators are considering a variety of requirements for energy storage facilities, including decommissioning rules. Meanwhile, the Michigan Public Service Commission is developing a state siting application process for energy storage facilities for use in cases where local siting rules are in conflict with state standards. The Massachusetts House passed a bill that would establish siting and permitting processes for energy storage facilities.

Figure 2. Total Number of Grid Modernization Actions by Quarter



States Incorporating Grid-Enhancing Technologies into Planning Processes

A growing number of states are requiring that utilities incorporate consideration of grid-enhancing technologies into their planning processes. In California, state lawmakers enacted legislation that requires each transmission utility to study the feasibility of projects using grid-

enhancing technologies before January 1, 2026. In New York, lawmakers are considering legislation that would allow the Department of Public Service to approve requests from distribution companies to develop grid enhancement technologies. Massachusetts legislators are considering a bill requiring utilities to report to the legislature on deployment of grid-enhancing technologies every five years, and last quarter, Illinois regulators released a plan encouraging the use of grid-enhancing technologies.

Figure 3. Most Common Types of Actions Taken in Q3 2024

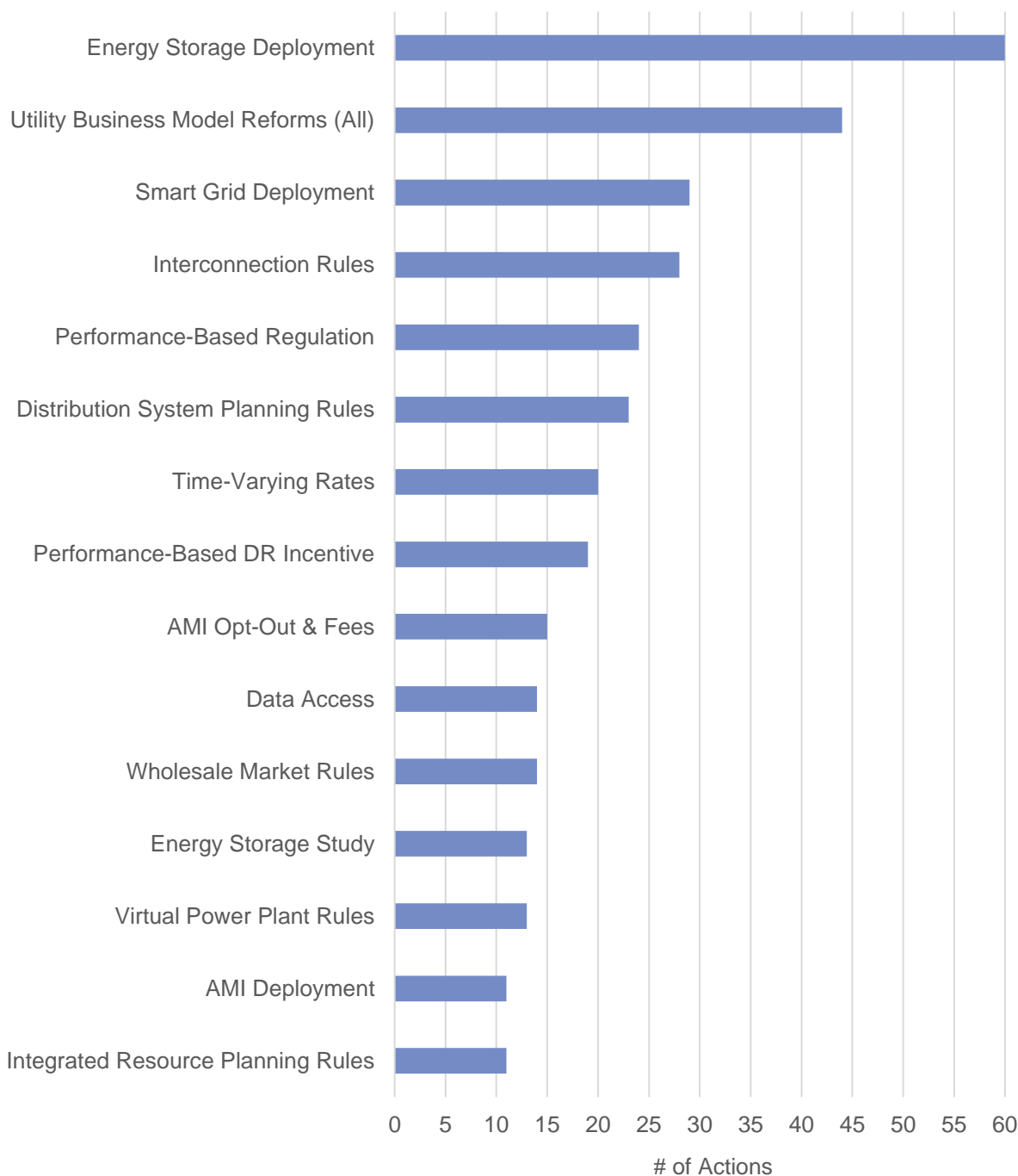


Figure 4. Most Active States of Q3 2024

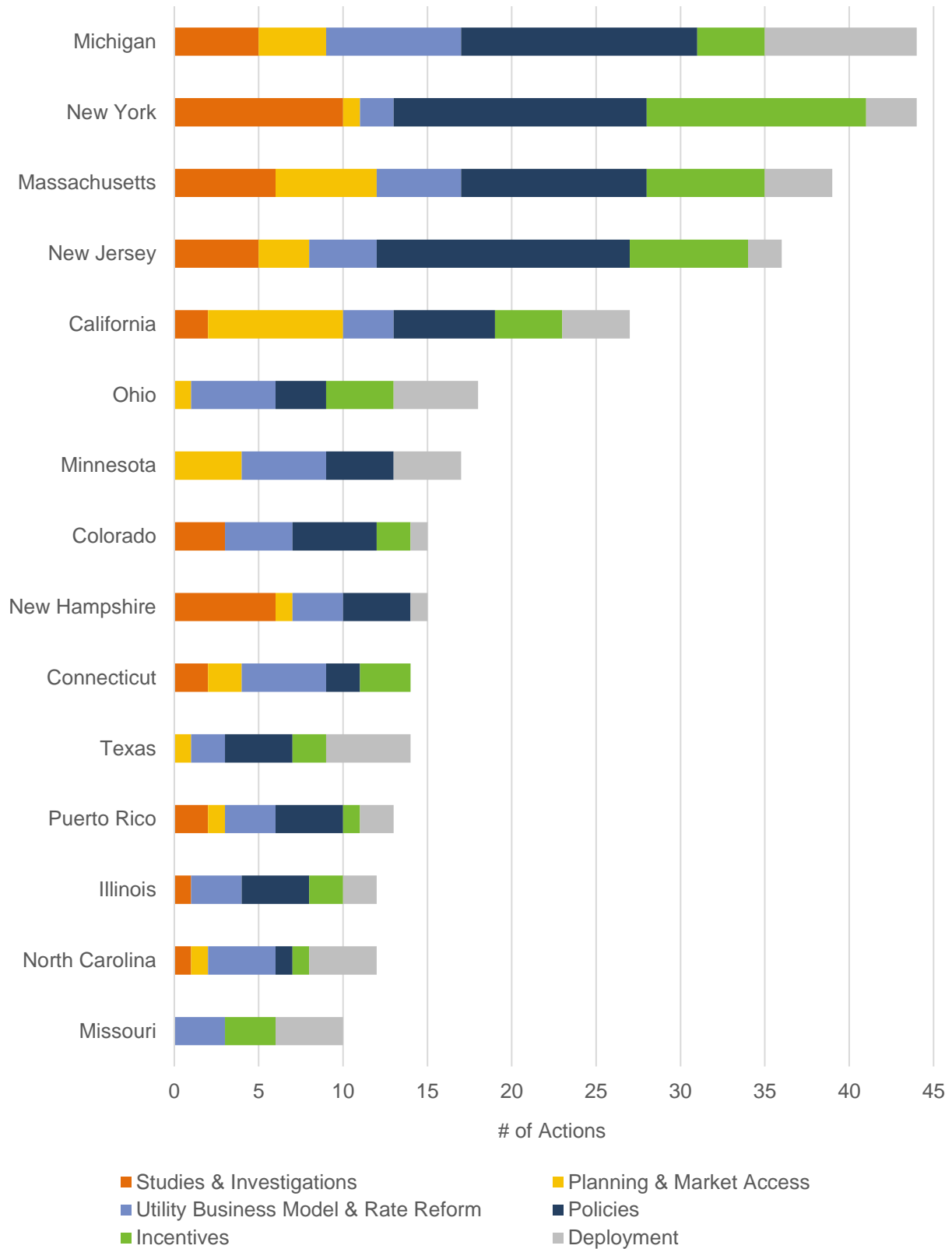
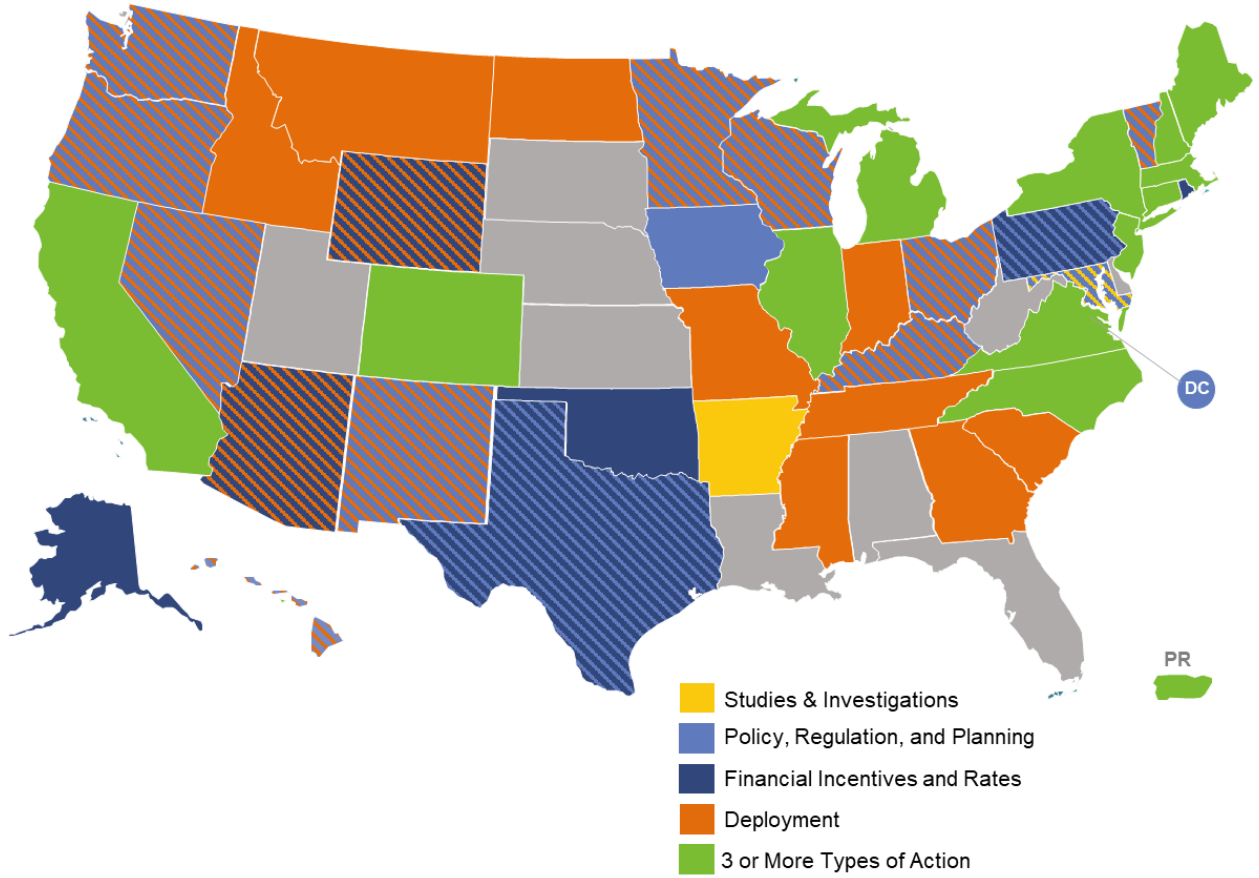


Figure 5. Q3 2024 Energy Storage Action, by Action Type



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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- Identify research needs to inform grid modernization proceedings
- Cite an objective source in your own research and analysis

PRICING

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