

50

STATES OF

GRID MODERNIZATION

Q2 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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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 2023 GRID MODERNIZATION ACTION

In the second quarter of 2023, all 50 states plus DC and Puerto Rico took a total of 539 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 539 actions catalogued, the most common were related to policies (130), planning and market access (91), and financial incentives (85).

Table 1. Q2 2023 Summary of Grid Modernization Actions

Type of Action	# of Actions	% by Type	# of States
Policies	130	24%	30 + PR
Planning and Market Access	91	17%	30 + DC, PR
Financial Incentives	85	16%	29
Business Model and Rate Reform	84	16%	39 + DC
Deployment	76	14%	34
Studies and Investigations	73	14%	27 + DC, PR
Total	539	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 5 GRID MODERNIZATION DEVELOPMENTS OF Q2 2023

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

South Carolina Energy Market Reform Study Released

South Carolina’s energy market reform measures study was released in April 2023, finding that South Carolina utility customers could save up to \$362 million a year by joining a regional transmission organization (RTO). The study, required by legislation enacted in 2020, presents a range of market reform options from that the state could take, including implementing a joint dispatch agreement or an energy imbalance market, creating a southeast RTO, or joining the PJM Interconnection RTO.

Maryland Lawmakers Adopt Energy Storage Target

Maryland lawmakers enacted legislation in May 2023 establishing an energy storage target of 3,000 MW by 2033. The bill also sets interim targets of 750 MW by 2027 and 1,500 MW by 2030. The program includes the use of competitive procurement mechanisms and incentives

planning for all electric grids in the state. The DSO would also be responsible for administering an open and transparent market for distributed energy resources and facilitating achievement of the state's climate goals.

Louisiana Commission Staff Files Proposed Rules for Utility Grid Resilience Plans

The Louisiana Public Service Commission Staff filed draft proposed rules for electric utility grid resilience plans during the quarter. The draft rules require utilities to submit an initial grid resilience plan by the end of 2024, assessing all assets and systems under the utility's ownership or direct management. The plans would provide a ten-year outlook for proposed resilience investments, as well as a five-year implementation plan.

MOST ACTIVE STATES AND SUBTOPICS OF Q2 2023

The most common types of actions across the country related to energy storage deployment (50), utility business model reforms (47), distribution system planning (34), interconnection rules (33), and integrated resource planning (25).

The states taking the greatest number of actions related to grid modernization in Q2 2023 can be seen in Figure 4. California, Texas, Maine, New York, Massachusetts, and Minnesota, saw the most action during the quarter, followed by New Jersey, Connecticut, North Carolina, Michigan, and Hawaii. Overall, 50 states, plus DC and Puerto Rico, took actions related to grid modernization in Q2 2023.

TOP GRID MODERNIZATION TRENDS OF Q2 2023

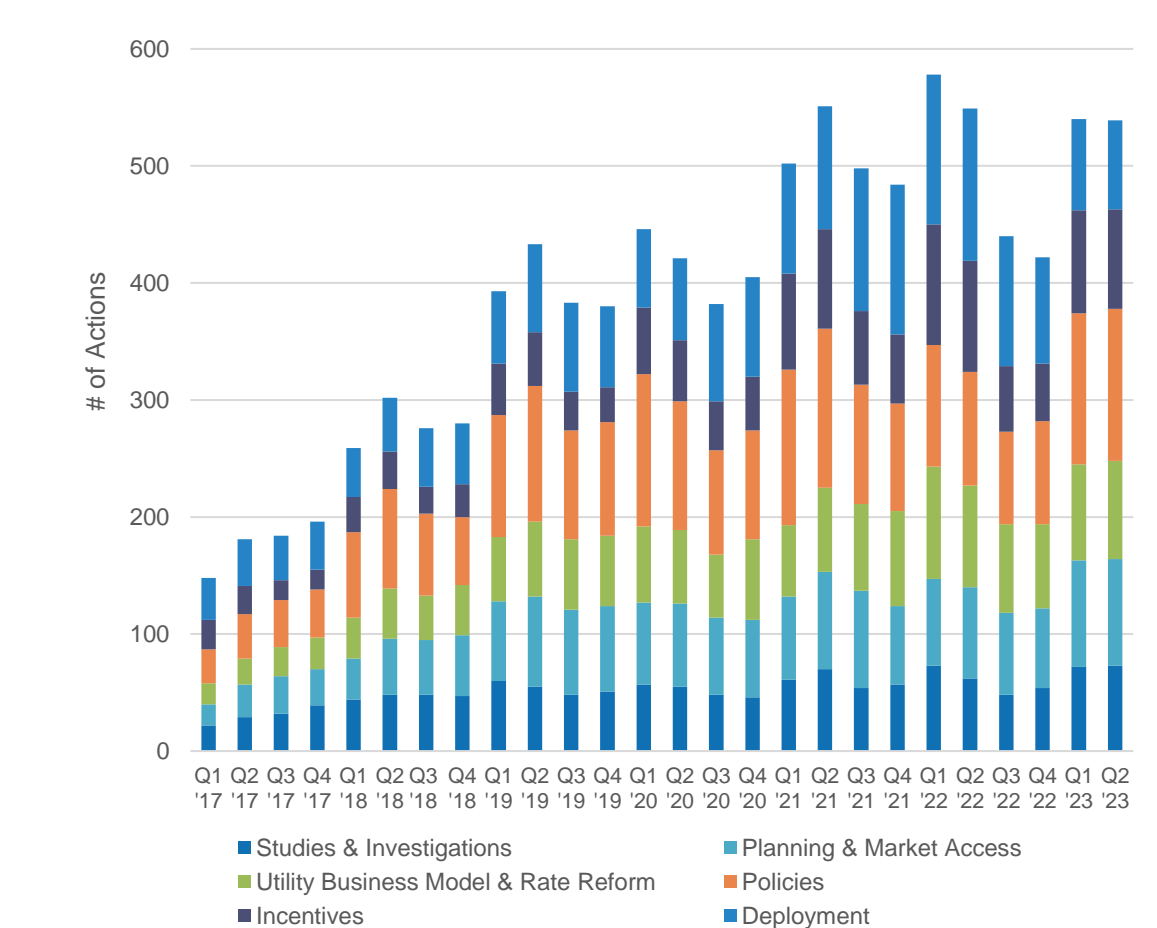
States and Utilities Moving Forward on Performance-Based Regulation

Several states and utilities took significant steps forward on performance-based regulation during Q2 2023. In Connecticut, the Public Utilities Regulatory Authority approved a framework for performance-based regulation and opened additional proceedings to specifically consider revenue adjustment mechanisms, performance mechanisms, and integrated distribution system planning. Meanwhile, Michigan regulators established a new workgroup on financial incentives and disincentives, which will develop metrics for distribution performance and explore rate structures and methods for applying incentives and disincentives. In New Hampshire, Liberty Utilities proposed new performance incentive mechanisms as part of its rate case application, which relate to reliability, time-of-use rate adoption, and interconnection times. Minnesota regulators approved Xcel Energy's map of performance metrics during the quarter and issued a request for comments regarding performance-based ratemaking for the utility.

Growing Interest in Long-Duration Battery Storage

States and utilities are expressing growing interest in long-duration battery storage, particularly by initiating studies on long-duration storage and including long-duration storage in planned capacity additions within integrated resource plans. In Massachusetts, the Department of Energy Resources is conducting a study on mid- to long-duration energy storage, pursuant to legislation enacted last year. Legislation enacted in Maine in late June 2023 directs the Governor’s Energy Office to study long-duration energy storage, with recommendations due in February 2024. A bill introduced in Michigan this year would require the Public Service Commission to complete a study on long-duration and multi-day storage systems and set targets for these resources. Meanwhile, several utilities, including Avista Utilities and PacifiCorp, have included long-duration storage additions in their most recent integrated resource plans.

Figure 2. Total Number of Grid Modernization Actions by Quarter



Utilities Including Storage Capacity Additions in Integrated Resource Plans

Among regulated utilities required to prepare integrated resource plans (IRPs), the majority of these are including energy storage capacity additions in their plans, with nearly all of this in the

form of battery storage. The planned storage capacity additions vary from utility to utility and are typically accompanied by significant renewable energy capacity additions as well to replace retiring resources or meet new demand. Dominion Energy Virginia filed its 2023 IRP during the quarter, which includes 15-year storage procurement estimates of 1,050 MW to 2,910 MW. Dominion Energy South Carolina’s most recent IRP projects the addition of 1,600 MW of battery storage. PacifiCorp’s latest IRP includes plans for 8,095 MW of storage over the next 20 years. Avista Utilities filed its IRP in May 2023, planning for about 195 MW of storage additions by 2045. In Michigan, DTE Electric’s pending IRP includes 1,810 of new battery storage.

Figure 3. Most Common Types of Actions Taken in Q2 2023

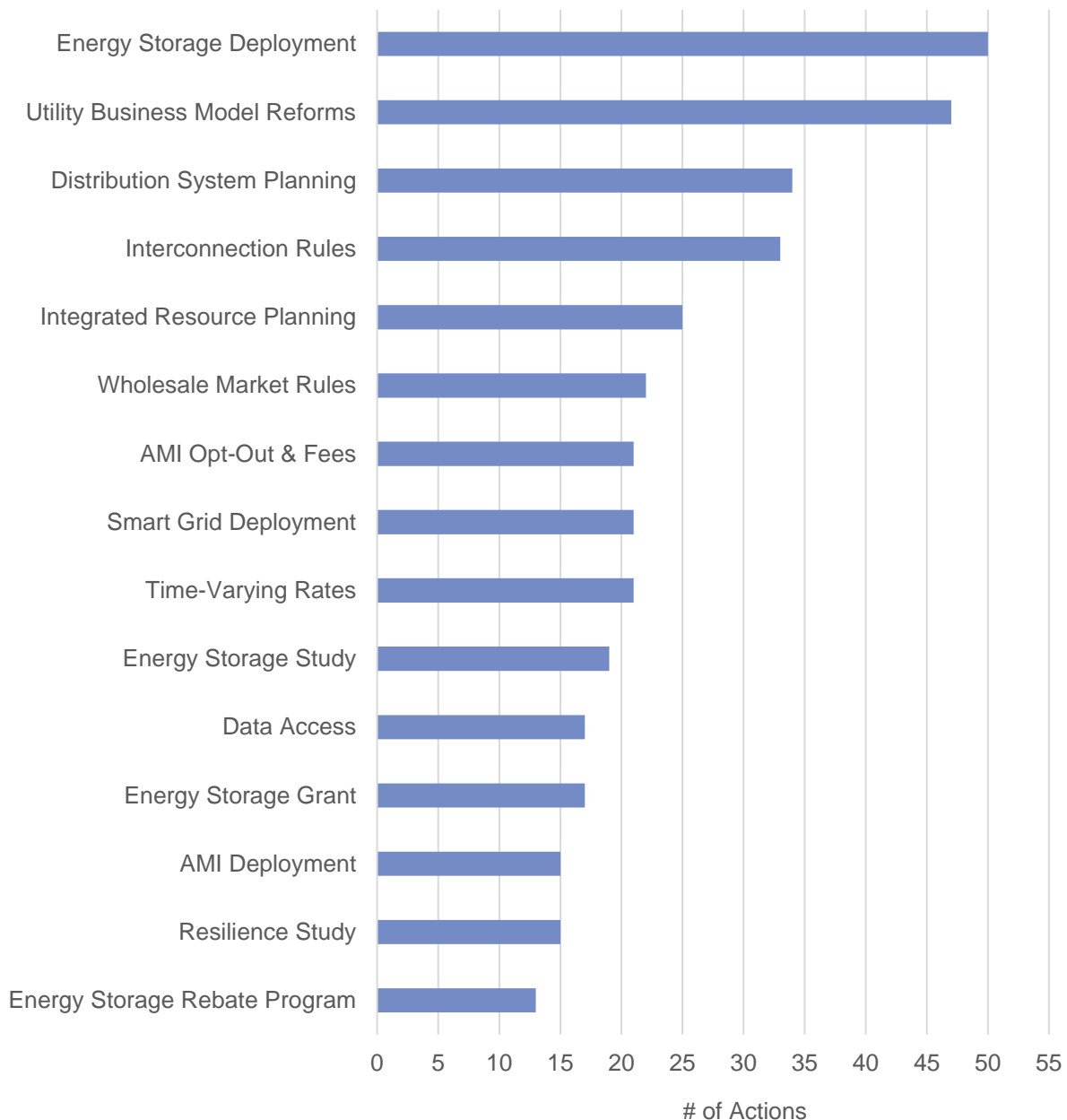


Figure 4. Most Active States of Q2 2023

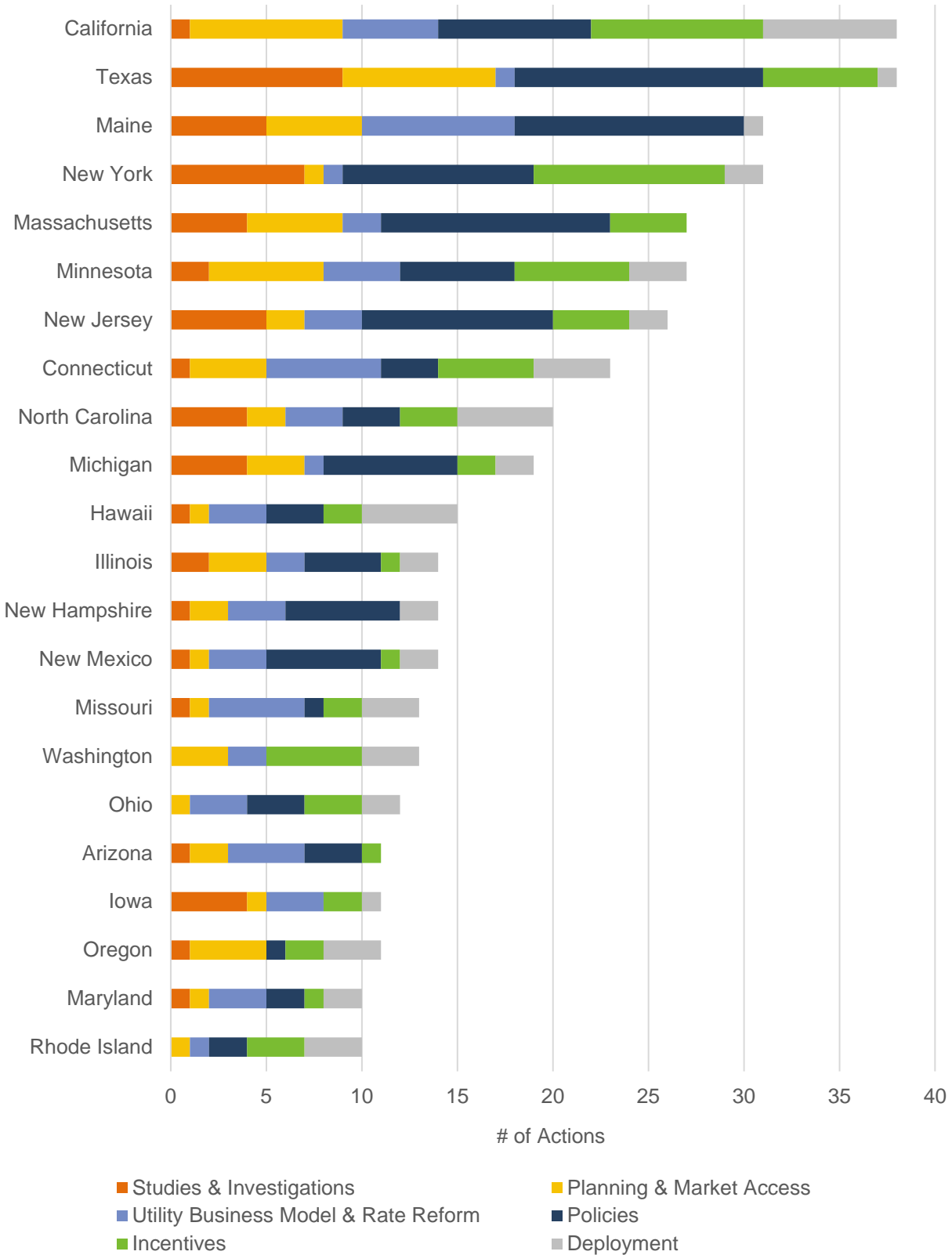
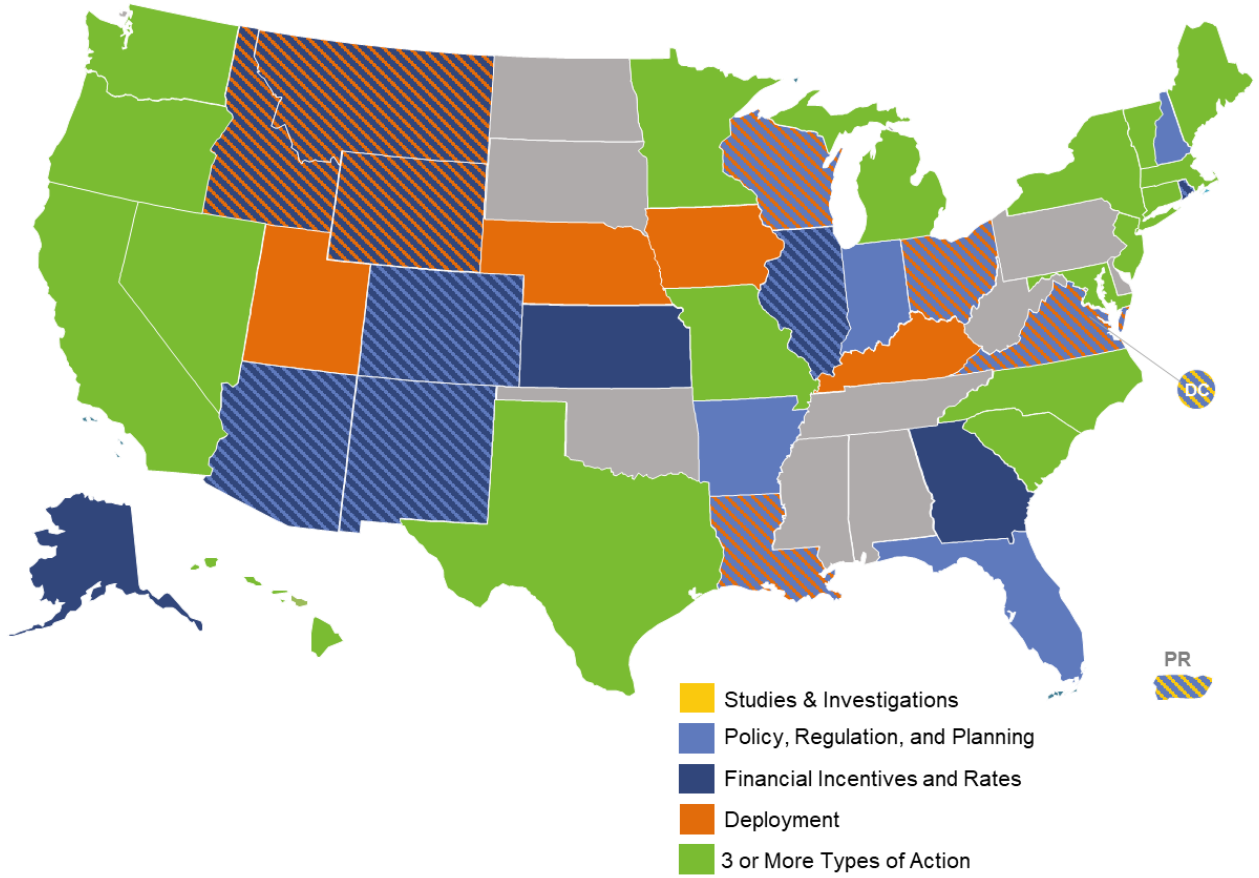


Figure 5. Q2 2023 Energy Storage Action, by Action Type



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.

Advanced Energy Technology Businesses

- Identify new market opportunities, as well as changing and risky markets
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- Learn about the approaches being taken by other utilities facing similar opportunities and challenges

- Stay on top of relevant state policy developments
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Investors and Financial Analysts

- Identify new investment opportunities and emerging areas of growth, as well as risky investments
- Identify active utility investment proceedings

Advocacy Organizations

- Learn about the diverse grid modernization actions occurring across the country
- Learn about the outcomes of other states' policy decisions
- Utilize an objective source of information in legislative and regulatory proceedings

Researchers and Consultants

- 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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