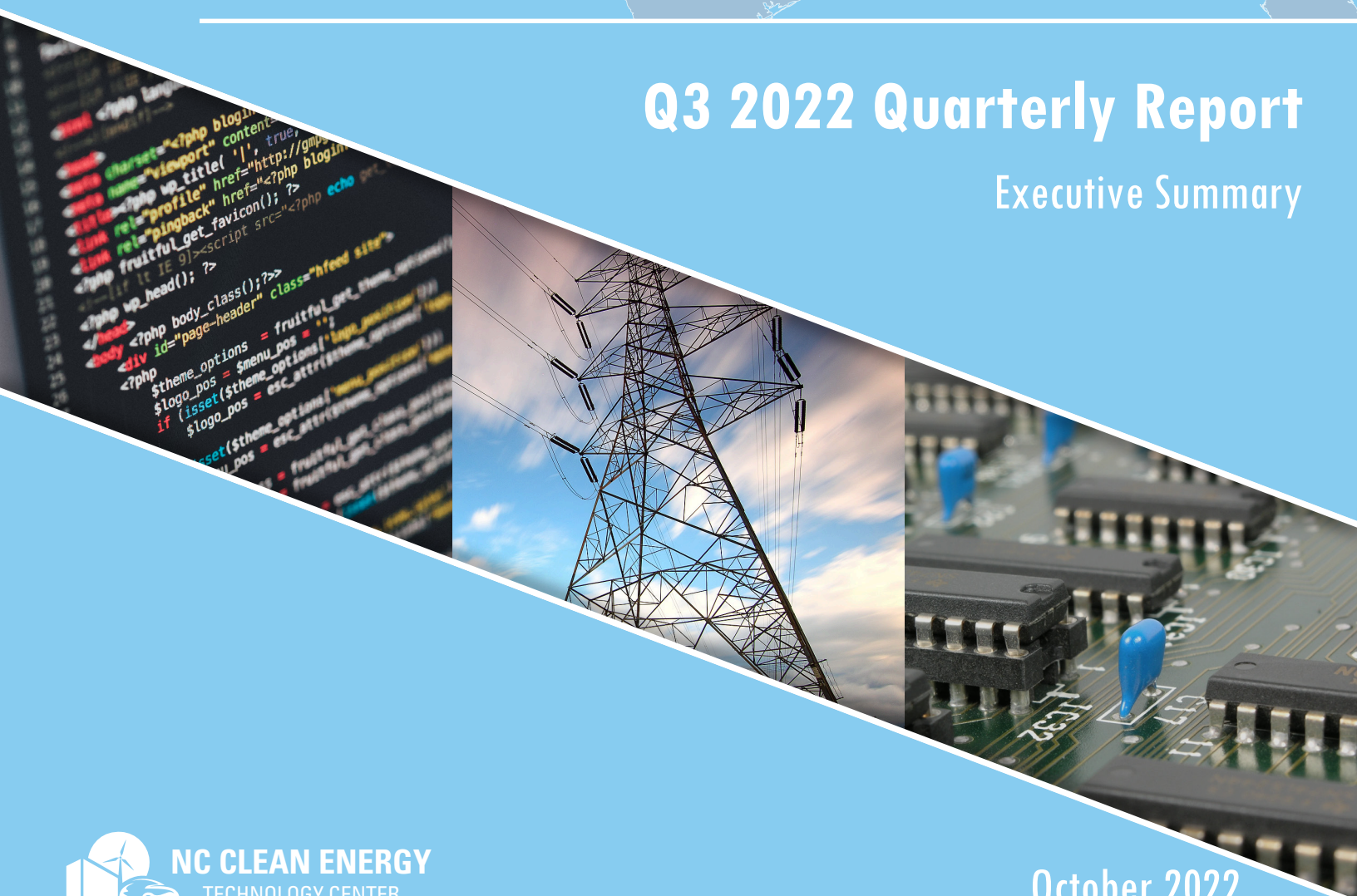


50 States of GRID MODERNIZATION

Q3 2022 Quarterly Report

Executive Summary



AUTHORS

Rebekah de la Mora
Justin Lindemann
Brian Lips
Vincent Potter
Autumn Proudlove
David Sarkisian

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.

CONTACT

Autumn Proudlove (afproudl@ncsu.edu)

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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* and *The 50 States of Electric Vehicles*. 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 2022 GRID MODERNIZATION ACTION

In the third quarter of 2022, 48 states plus DC took a total of 441 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 441 actions catalogued, the most common were related to deployment (111), policies (78), and business model and rate reform (76).

Table 1. Q3 2022 Summary of Grid Modernization Actions

Type of Action	# of Actions	% by Type	# of States
Deployment	111	25%	37
Policies	78	18%	23 + DC
Business Model and Rate Reform	76	17%	32 + DC
Planning and Market Access	70	16%	26 + DC
Financial Incentives	56	13%	23
Studies and Investigations	50	11%	24 + DC
Total	441	100%	48 States + DC

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 2022

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

Massachusetts Lawmakers Establish Electric Sector Modernization Planning Requirements

Massachusetts lawmakers enacted H. 5060 in August 2022, which requires utilities to develop electric sector modernization plans. The plans are to focus on transmission and distribution system upgrades to improve grid reliability, resiliency, and adoption of renewable energy and distributed resources, among other goals. The bill also established a grid modernization advisory council, which will provide input on the modernization plans.

First Energy Files Grid Mod II Investment Plan in Ohio

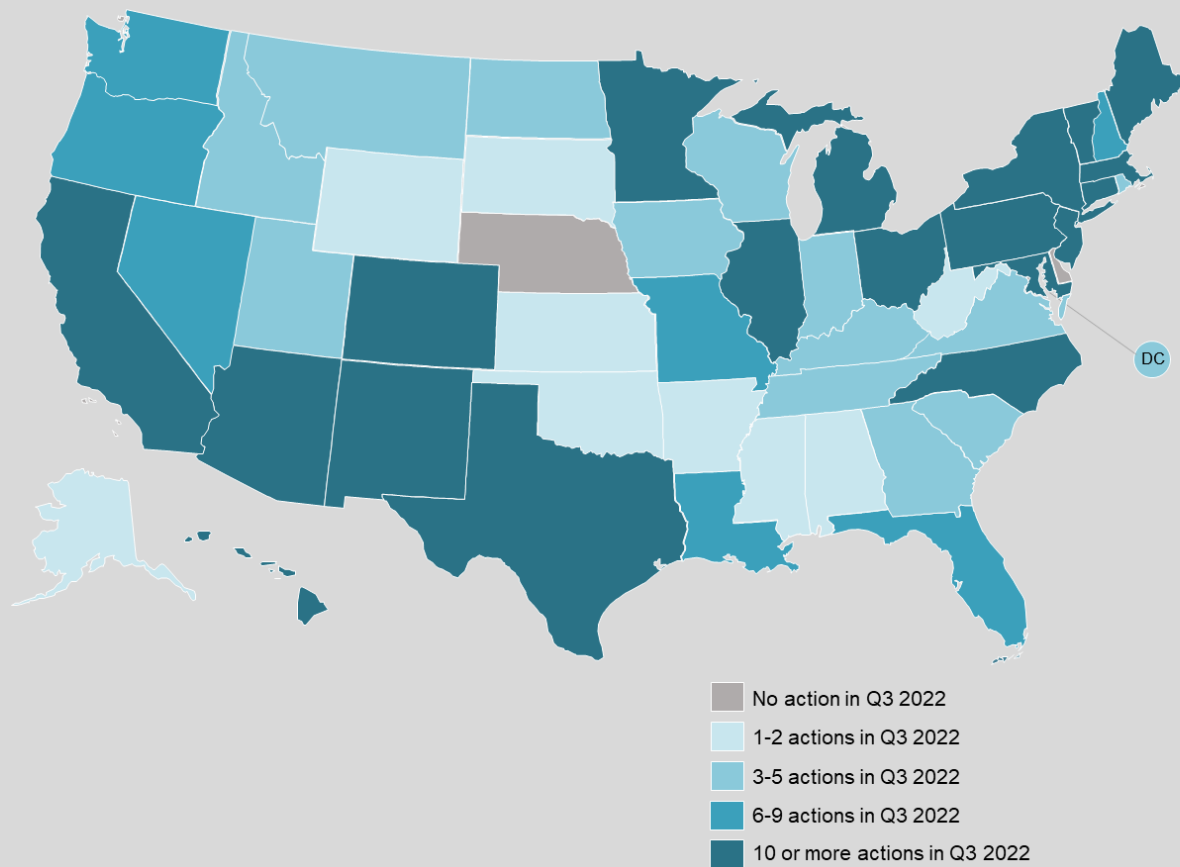
In Ohio, First Energy filed an application for approval of the second phase of its distribution grid modernization plan ("Grid Mod II") in July 2022. The \$626.4 million plan includes

investments in advanced metering infrastructure, distribution automation, an advanced distribution management system, and a distributed energy resource management system, among other investments.

Illinois Commerce Commission Approves Utility Performance Metrics

The Illinois Commerce Commission (ICC) approved eight performance metrics each for Ameren Illinois and Commonwealth Edison, which will be used in a multi-year performance-based ratemaking framework for the utilities. The metrics differ for each utility, but include enhancing reliability, improving interconnection timelines, reducing load, strengthening grid performance, and expanding diverse contractor participation.

Figure 1. Q3 2022 State and Utility Action on Grid Modernization



New Jersey Regulators Issue Storage Incentive Program Straw Proposal

The New Jersey Board of Public Utilities filed a straw proposal for the New Jersey Storage Incentive Program in late September 2022. The straw proposal includes incentives for both

grid supply and distributed projects, with 30% of the incentive being structured as an annual per-kWh incentive. Grid supply projects would be paid based on abated carbon emissions, and distributed projects would be paid for contributions to certain performance hours.

California Regulators Open Rulemaking to Advance Demand Flexibility Through Rates

In July 2022, the California Public Utilities Commission opened a new rulemaking to advance demand flexibility through electric rates. Among the proceeding's objectives are to enhance reliability, improve affordability and equity, reduce curtailment of renewable energy, reduce greenhouse gas emissions, and enable electrification. The Commission will consider updates to its rate design principles and guidance principles for demand flexibility, and may authorize new pilots rates, programs, studies, or tools.

MOST ACTIVE STATES AND SUBTOPICS OF Q3 2022

The most common types of actions across the country related to energy storage deployment (66), utility business model reforms (45), smart grid deployment (39), distribution system planning (27), and advanced metering infrastructure deployment (26).

The states taking the greatest number of actions related to grid modernization in Q3 2022 can be seen in Figure 4. California, New York, Massachusetts, Michigan, and Illinois saw the most action during the quarter, followed by Connecticut, Hawaii, New Jersey, Minnesota, Colorado, and New Mexico. Overall, 48 states, plus DC, took actions related to grid modernization in Q3 2022.

TOP GRID MODERNIZATION TRENDS OF Q3 2022

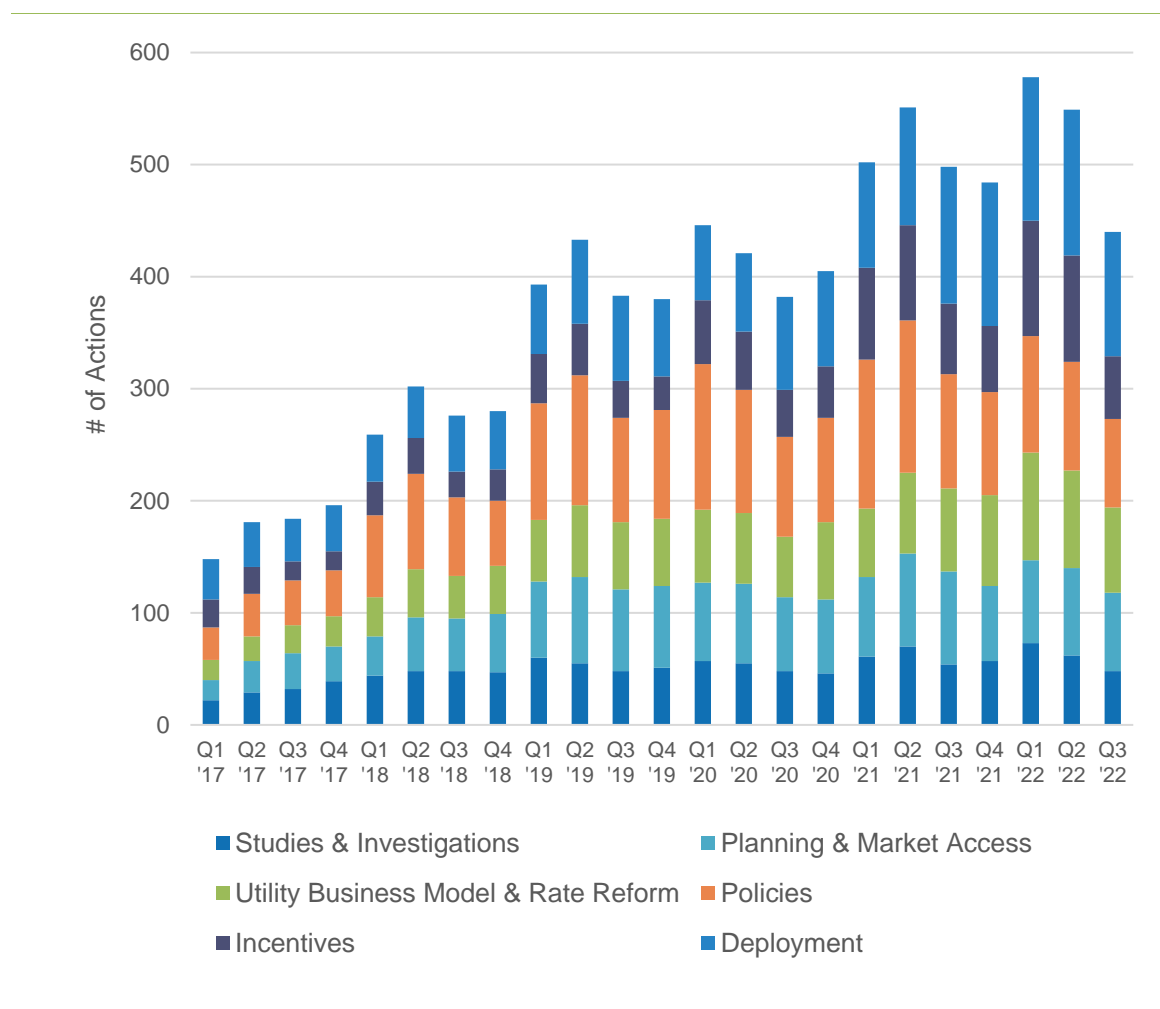
States Moving Toward Performance-Based Regulation

A number of states took steps moving toward performance-based regulation during the quarter, with activity particularly focused around performance metrics. In Illinois, regulators approved eight performance metrics each for Ameren Illinois and Commonwealth Edison, which will be used as a part of their multi-year performance-based ratemaking framework. The Vermont Public Utility Commission approved new performance metrics for Green Mountain Power during the quarter as well, with the metrics focused on fleet electrification, battery back-up during outages, and access to renewable or innovative energy services in low-income communities. United Illuminating filed a general rate case application with Connecticut regulators in September 2022, including a demonstration program for performance-based metrics. The proposed tracking metrics include distributed energy resource interconnection, electric vehicle managed charging, electric storage adoption, and customer e-bill adoption. Duke Energy Progress also filed proposed performance incentive mechanisms in North Carolina in early October, following a technical conference in July.

States and Utilities Examining Rate Designs for Energy Storage Facilities

Some states are beginning to examine potential rate designs specifically aimed at customers with battery storage systems. In Massachusetts, lawmakers enacted legislation directing each distribution company to file at least one rate tariff applicable to distribution-connected energy storage systems by October 31, 2023. The Maine Public Utilities Commission approved new rate schedules for battery storage facilities in September 2022. Several of the rates approved for Central Maine Power and Versant Power will be applicable to both battery storage and electric vehicle charging. In Michigan, Consumers Energy requested approval for a new large wholesale electric storage tariff for customers with batteries of at least 100 kW that are interested in participating in the wholesale capacity, energy, and ancillary services market.

Figure 2. Total Number of Grid Modernization Actions by Quarter



States Moving Toward Competitive Procurement of Resources

States and utilities are increasingly using competitive procurement mechanisms, and particularly all-source competitive procurements, for new resources. These mechanisms can open the door for energy storage and other less traditional resources to compete to meet

system needs. New Mexico regulators approved new integrated resource planning (IRP) rules in September 2022, which require utilities to issue RFPs for new resources following approval of IRPs. The rules do allow the Commission to grant a variance request if an RFP process is not the best option for obtaining a resource. Proposed IRP rules currently pending in Arizona would require the use of all-source RFPs. Idaho Power filed an application for approval of an all-source RFP in Oregon to meet the utility’s 2026 capacity resource need; the utility is seeking up to 1,100 MW of variable energy resources and at least 800 MW of peak capacity.

Figure 3. Most Common Types of Actions Taken in Q3 2022

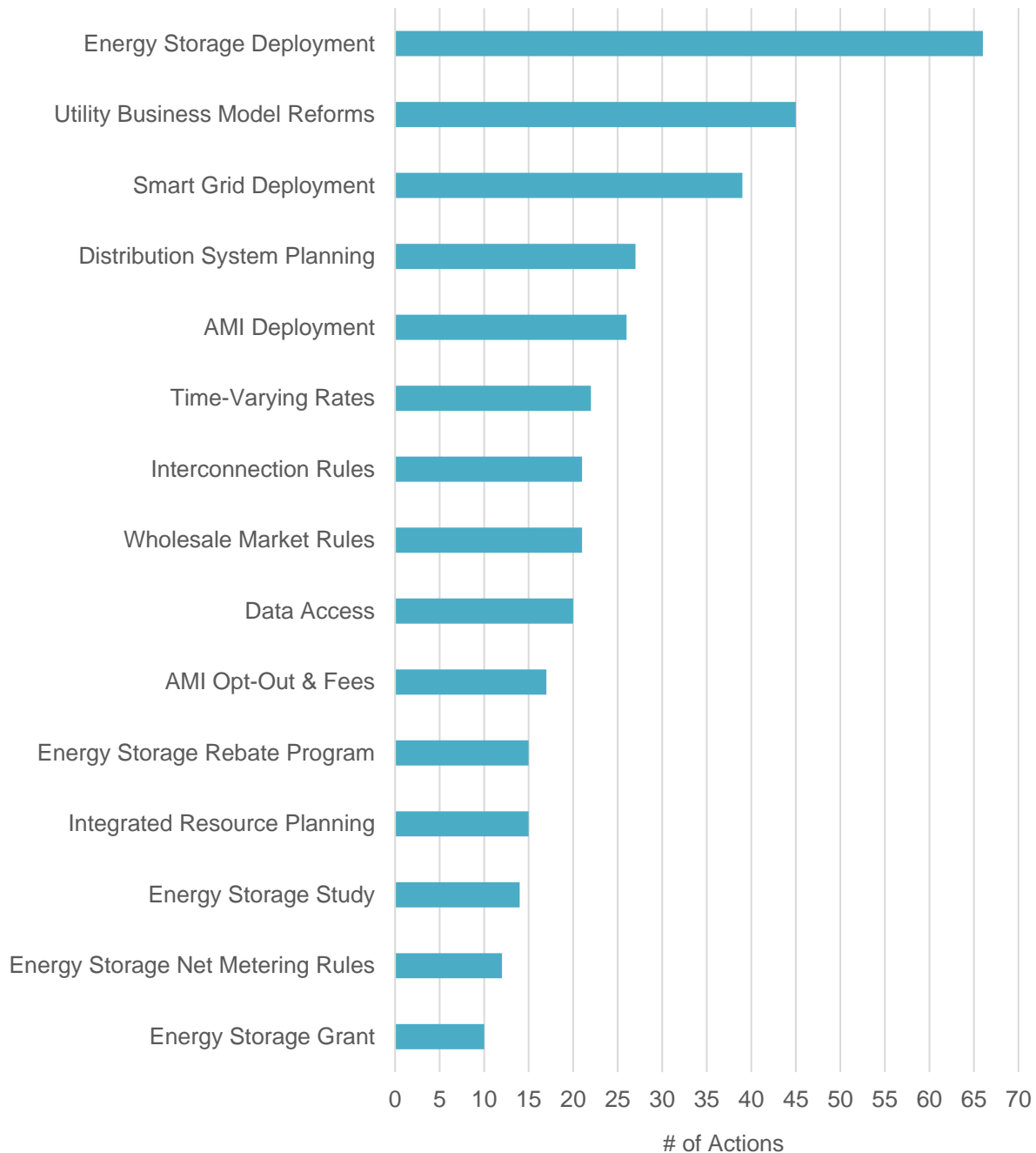


Figure 4. Most Active States of Q3 2022

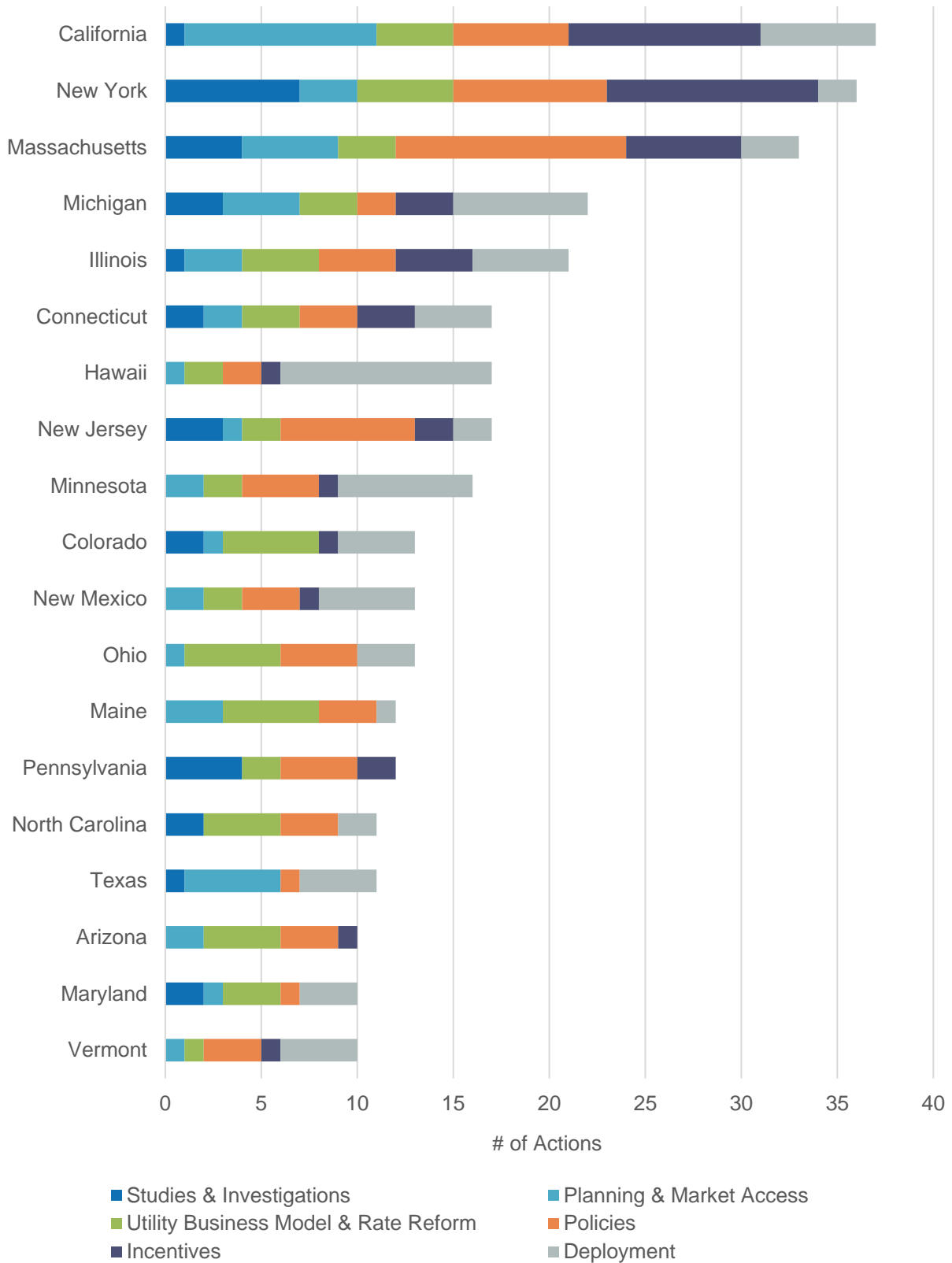
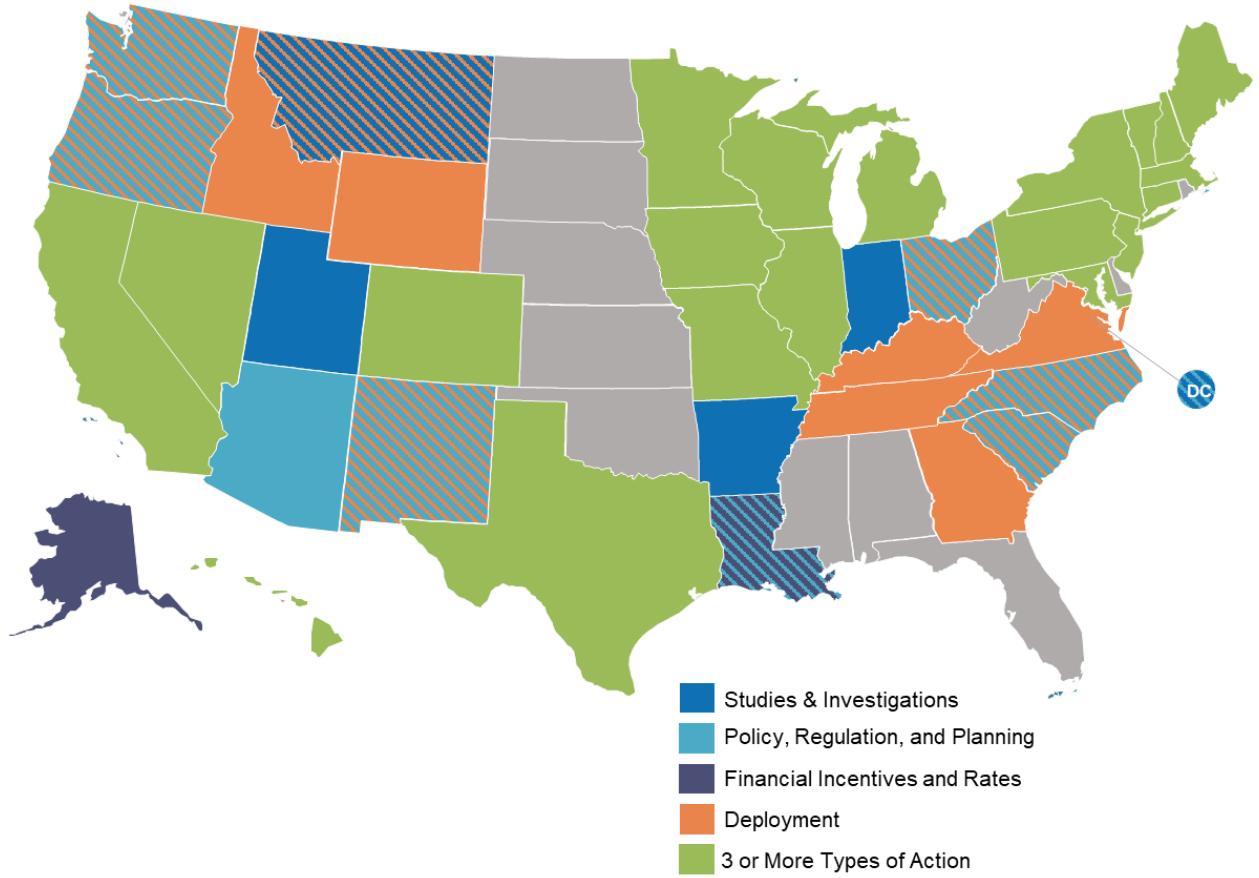


Figure 5. Q3 2022 Energy Storage Action, by Action Type



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

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