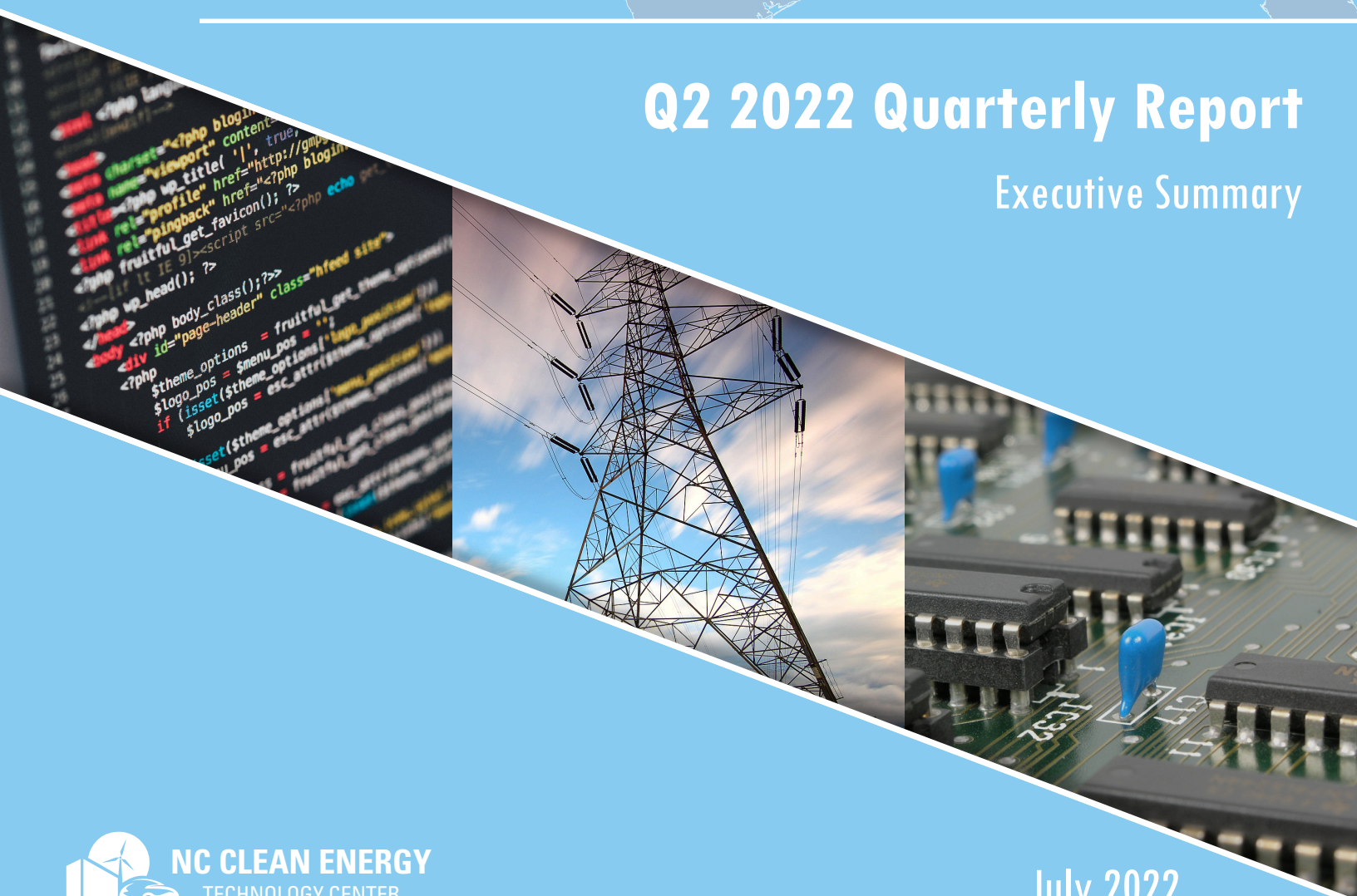


50 States of GRID MODERNIZATION

Q2 2022 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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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

Q2 2022 GRID MODERNIZATION ACTION

In the second quarter of 2022, 48 states plus DC took a total of 549 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 549 actions catalogued, the most common were related to deployment (130), policies (97), and financial incentives (95).

Table 1. Q2 2022 Summary of Grid Modernization Actions

Type of Action	# of Actions	% by Type	# of States
Deployment	130	24%	37
Policies	97	18%	29 + DC
Financial Incentives	95	17%	31
Business Model and Rate Reform	87	16%	37 + DC
Planning and Market Access	78	14%	27 + DC
Studies and Investigations	62	11%	28 + DC
Total	549	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 Q2 2022

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

Arizona Public Service Files Distributed Demand-Side Resource Aggregation Tariff

In June 2022, Arizona Public Service (APS) filed its proposed Distributed Demand-Side Resource Aggregation (DDSR) tariff. APS will issue periodic solicitations for specific grid needs, as identified in the utility's integrated resource plans. DDSR aggregators will submit bids to provide grid services with customer-sited DDSRs, and APS will contract directly with the aggregators for grid services, including flexible capacity/demand, locational value, and ancillary grid services.

Illinois Commerce Commission Completes Energy Storage Study

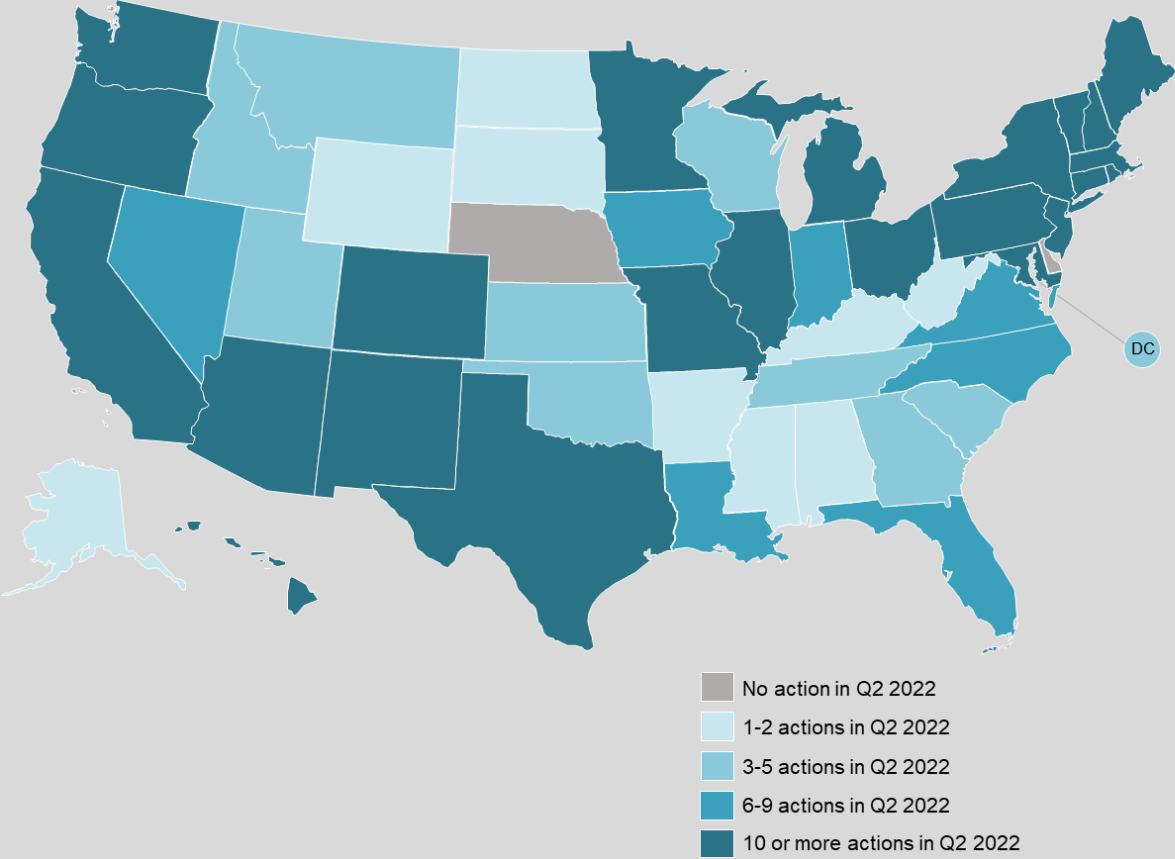
The Illinois Commerce Commission (ICC) completed its energy storage study in May 2022, as required by Public Act 102-0662. The study recommends that the ICC decline to recommend

specific energy storage deployment targets at this time, as there will be numerous proceedings taking place over the next two years that may profoundly impact any targets. The study also recommends that the ICC consider energy storage pilot projects to gather additional information.

Colorado Lawmakers Enact Energy Storage and Resilience Legislation

Colorado lawmakers enacted multiple bills related to energy storage and grid resilience during Q2 2022. These bills include H.B. 1249, which requires the development of a grid resilience and reliability roadmap, as well as S.B. 51, which establishes new tax incentives for energy storage systems. State legislators also enacted H.B. 1013, creating a grant program supporting microgrids for community resilience.

Figure 1. Q2 2022 State and Utility Action on Grid Modernization



Straw Proposal on Reliability and Resilience Frameworks Filed in Connecticut

The Connecticut Public Utilities Regulatory Authority released a straw proposal on reliability and resilience program frameworks in May 2022. The resilience straw proposal focuses on mitigation, preparedness, response, and recovery, with guidance for utility resilience plans.

Utilities would have to conduct benefit-cost analyses for resilience programs, including benefits related to storm restoration, customer interruption, vegetation management, and pole replacement costs.

Hawaii Regulators Adopt Additional Performance Incentive Mechanisms

Hawaii regulators approved new performance incentive mechanisms (PIMs) for the HECO utilities in June 2022. The new PIMS are related to grid reliability and timely interconnection of large-scale renewable energy projects. The Commission also modified and extended the interim grid services PIM and approved a shared savings mechanism for cost control of fossil fuel, purchased power, and non-annual revenue adjustment costs.

MOST ACTIVE STATES AND SUBTOPICS OF Q2 2022

The most common types of actions across the country related to energy storage deployment (81), utility business model reforms (50), smart grid deployment (45), advanced metering infrastructure deployment (30), and distribution system planning (28).

The states taking the greatest number of actions related to grid modernization in Q2 2022 can be seen in Figure 4. California, New York, Massachusetts, Minnesota, and Illinois saw the most action during the quarter, followed by Michigan, Hawaii, Connecticut, New Jersey, Arizona, and Colorado. Overall, 48 states, plus DC, took actions related to grid modernization in Q2 2022.

TOP GRID MODERNIZATION TRENDS OF Q2 2022

States Consider Cost-Sharing for Grid Upgrades Needed for DER Interconnection

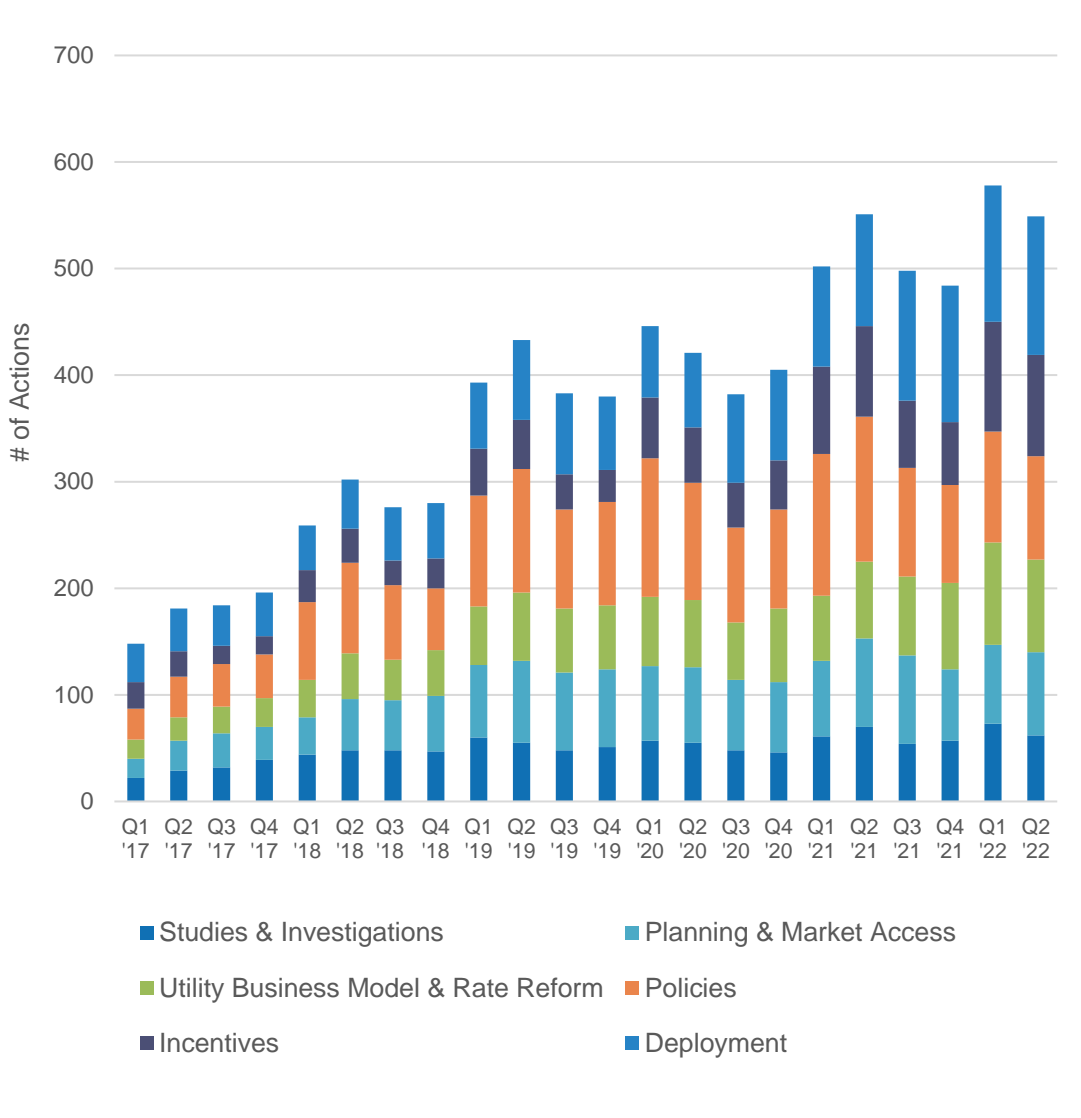
Regulators in a growing number of states are considering the adoption of rules allowing cost-sharing for grid upgrades needed for the interconnection of distributed energy resources (DERs). In Minnesota, Xcel Energy filed a cost-sharing implementation plan in May 2022. Xcel Energy's plan would levy a \$200 fee on distributed energy projects under 40 kW to establish a fund to defray required upgrade and interconnection facilities costs. Meanwhile, the Connecticut Public Utilities Regulatory Authority opened a new proceeding in June 2022 to investigate cost-sharing proposals for DER interconnection and infrastructure upgrades. Proposed interconnection rule revisions under consideration in Vermont would allow group studies for interconnecting customers to share study or upgrade costs. The Massachusetts Department of Public Utilities adopted a provisional system planning program last year, which involves cost-sharing among both interconnecting customers and other distribution customers.

States Expand Financing Programs for Energy Storage and Grid Resilience

Several states took steps to expand financing programs for energy storage and grid resilience improvements during Q2 2022. One of the major types of financing drawing attention during

the quarter was Property Assessed Clean Energy (PACE) financing. Lawmakers in Alaska, Connecticut, Pennsylvania, and Virginia all enacted legislation expanding their state’s commercial PACE financing programs to include projects that provide resilience benefits, like microgrids and energy storage. In Maryland, state legislators enacted a bill creating a climate catalytic capital fund, which will be used to expand deployment of clean energy and energy storage capacity. Colorado lawmakers also created a new program called the Sustainable Rebuilding Program, which will provide loans and grants to fund the rebuilding of high-performing, energy-efficient, resilient homes and structures.

Figure 2. Total Number of Grid Modernization Actions by Quarter



States and Utilities Enhance Access to Energy Usage Data

Many states across the country have been working to enhance access to energy usage data for customers and approved third parties. This trend continued in Q2 2022, with regulators in several states issuing decisions on the issue. In Michigan, the Public Service Commission

approved a settlement agreement under which Consumers Energy will make Green Button Download my Data and Connect my Data platforms available to all residential and non-residential customers. An administrative law judge in Pennsylvania recommended that the Commission approve a settlement including implementation of a standard form of data access authorization for third-party data requests in First Energy utility territories. North Carolina regulators revived an existing data access proceeding, requesting additional information from utilities and the Public Staff. In Minnesota, the Public Utilities Commission approved certain utilities' proposal for releasing whole building data.

Figure 3. Most Common Types of Actions Taken in Q2 2022

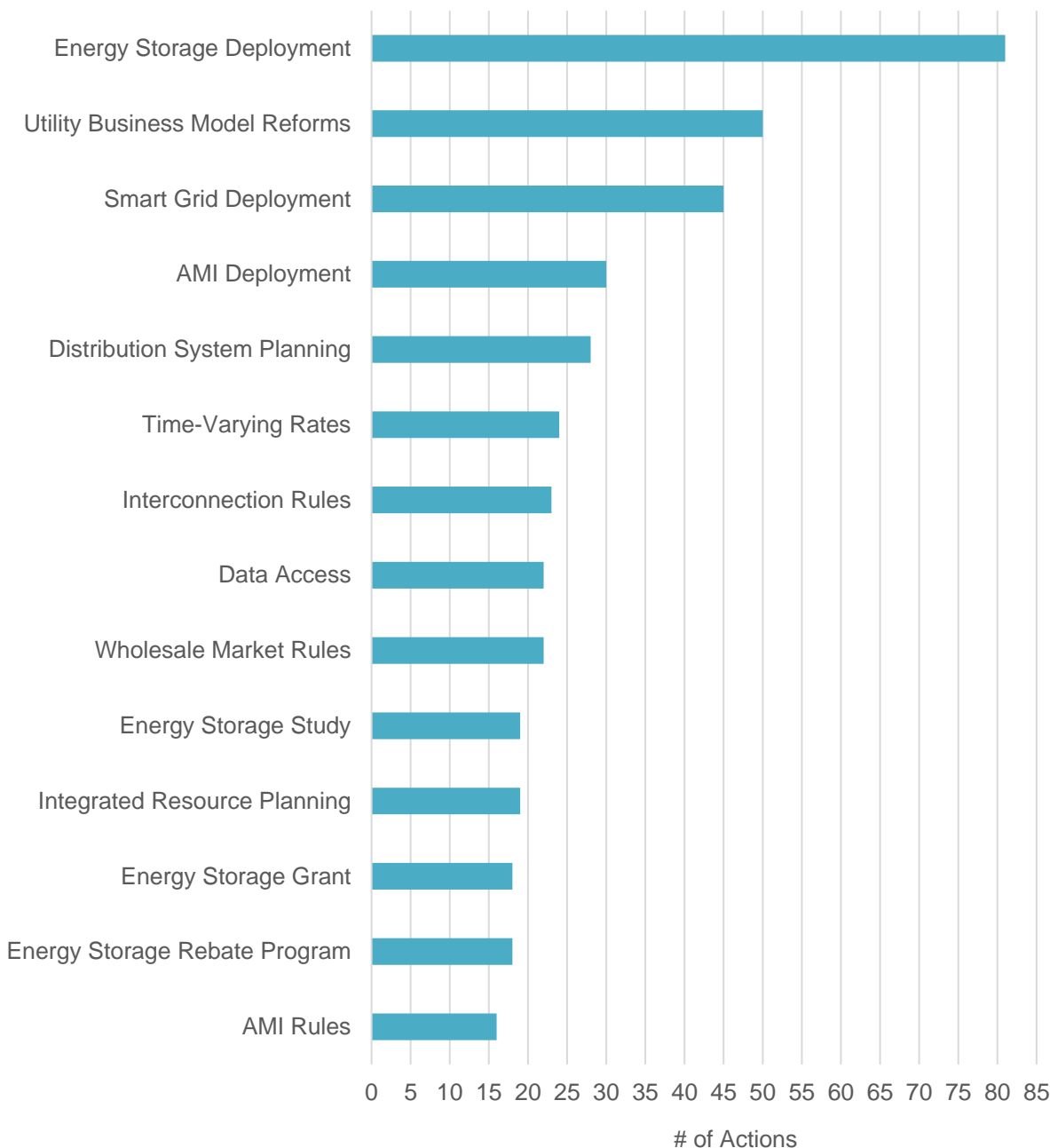


Figure 4. Most Active States of Q2 2022

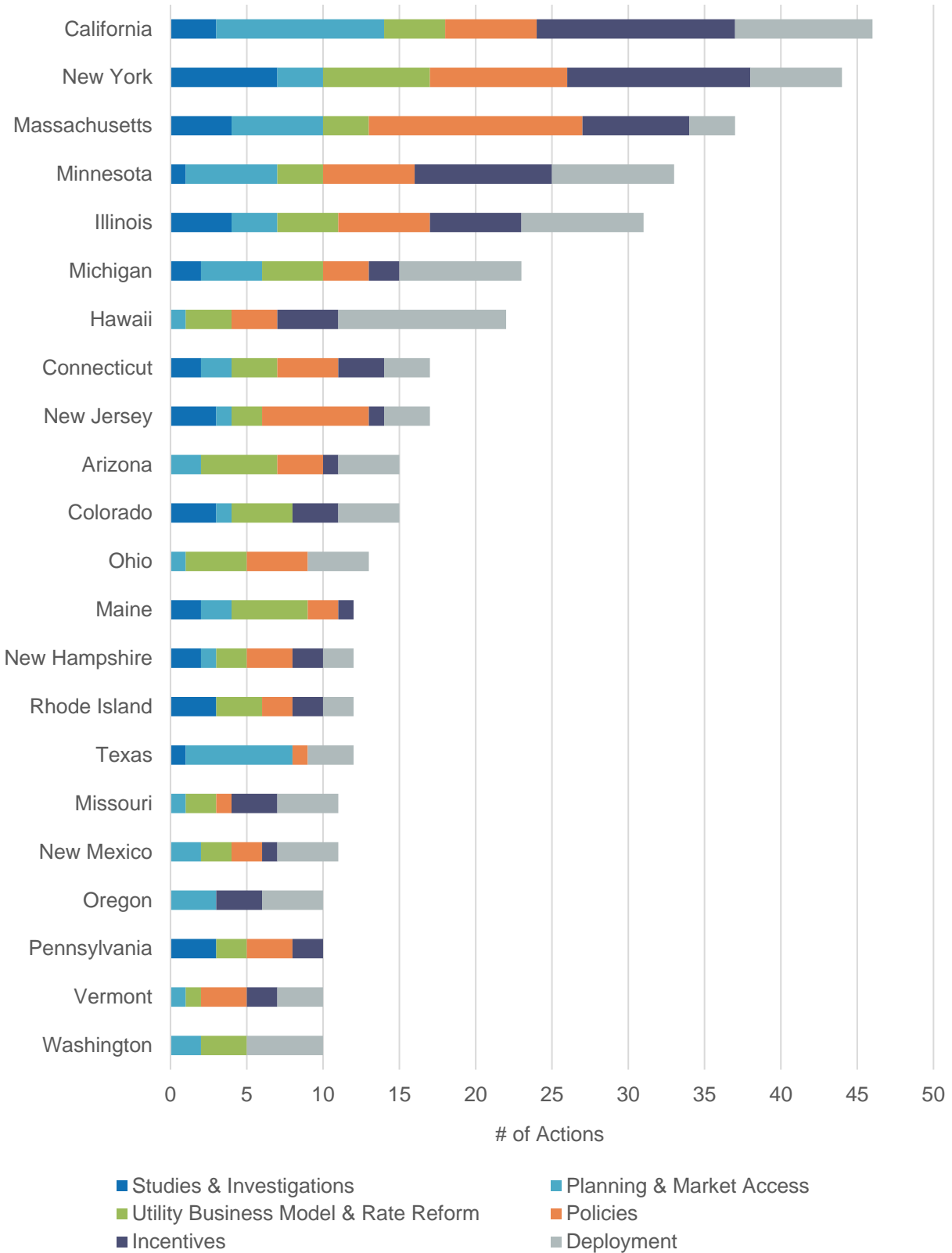
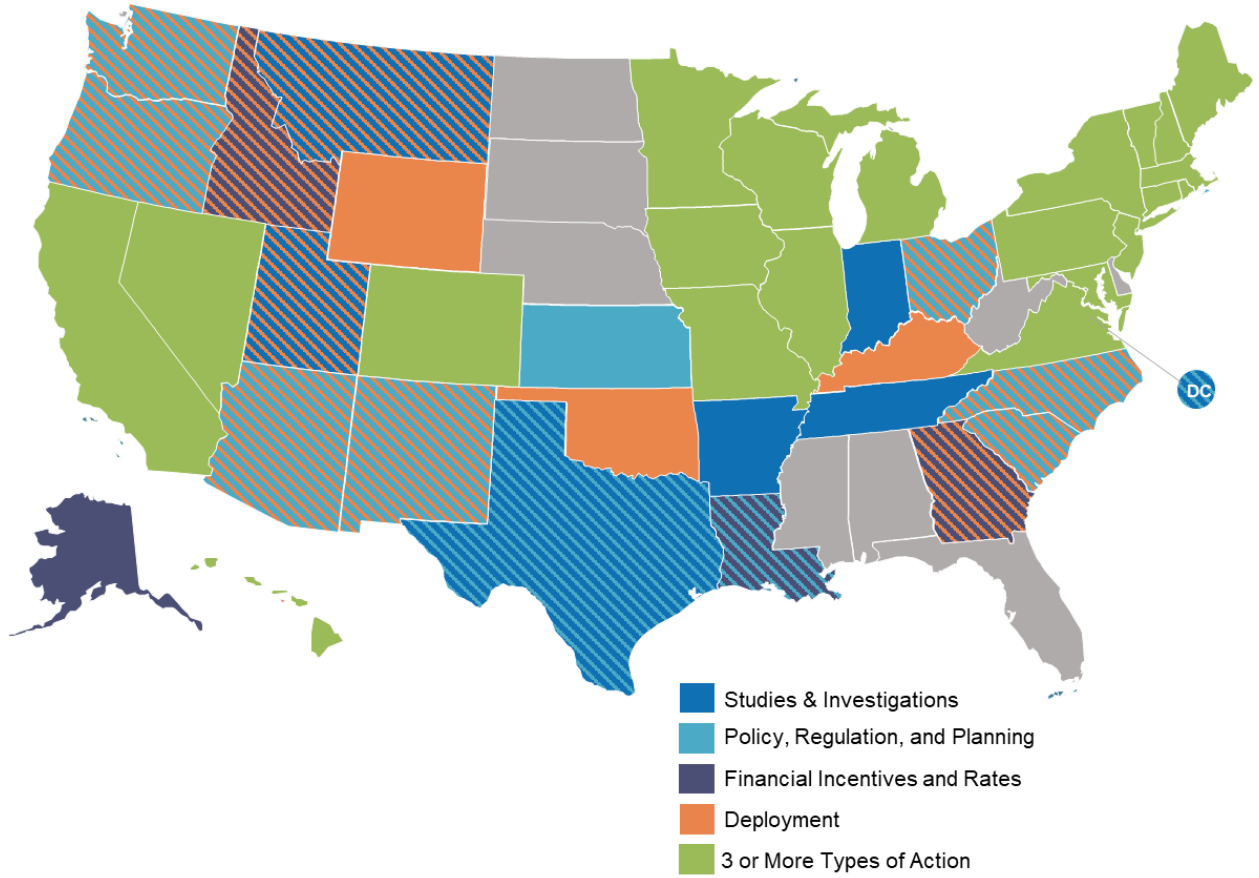


Figure 5. Q2 2022 Energy Storage Action, by Action Type



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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- Identify active utility investment proceedings

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- Utilize an objective source of information in legislative and regulatory proceedings

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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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