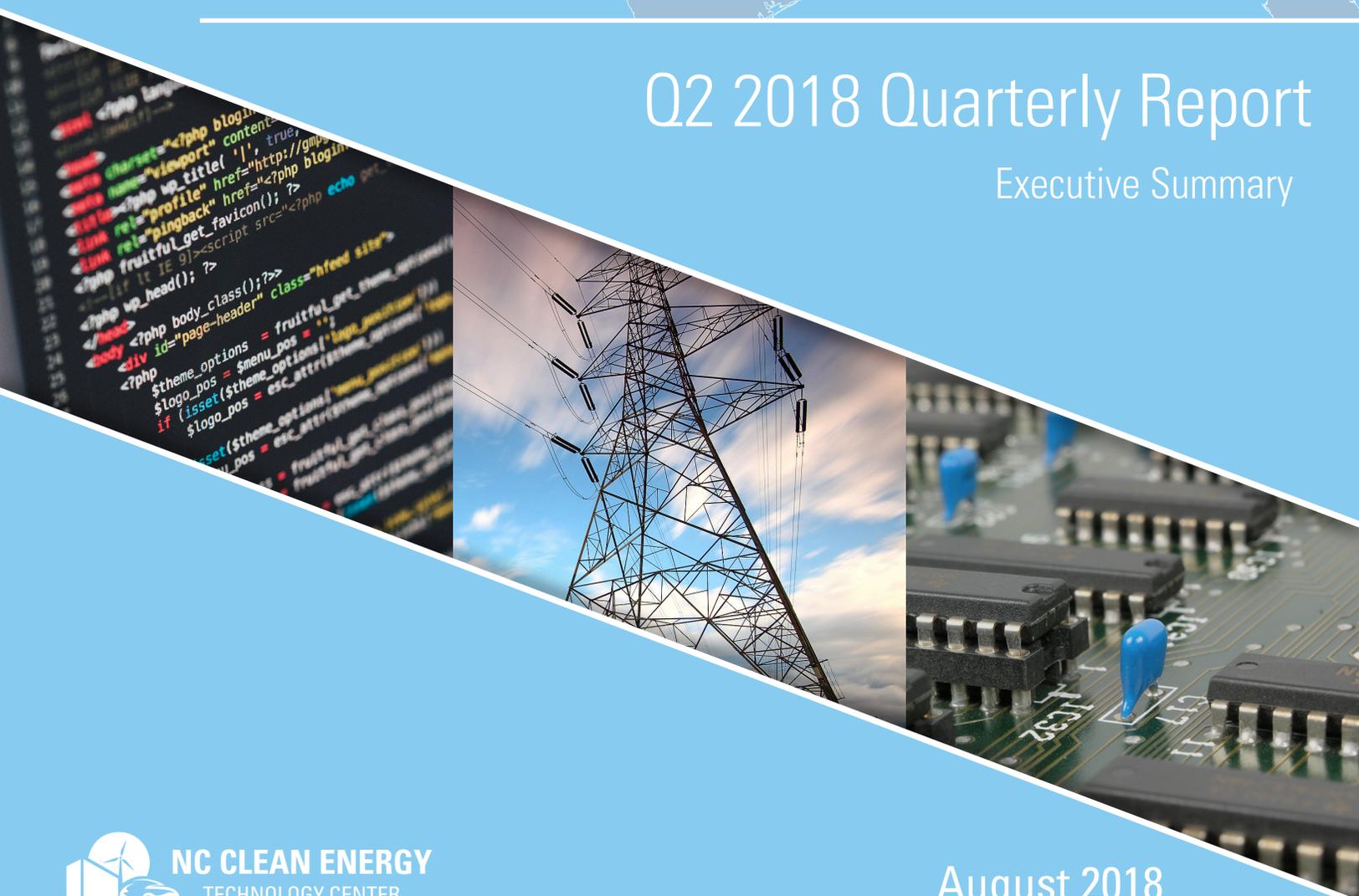


50 States of GRID MODERNIZATION

Q2 2018 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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- Q1 2018: [Executive Summary](#)
- Q4 2017 and 2017 Annual Review: [Executive Summary](#)
- Q3 2017: [Full Report](#) | [Executive Summary](#)
- Q2 2017: [Full Report](#) | [Executive Summary](#)
- Q1 2017: [Full Report](#) | [Executive Summary](#)

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*. Previous editions of these reports are available for download at www.nccleantech.ncsu.edu/the-50-states-reports/.

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.

Time-varying rate 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.

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 advanced 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 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. 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 and changes related to electric vehicles; these changes are covered in the 50 States of Solar and 50 States of Electric Vehicles quarterly reports, respectively.

EXECUTIVE SUMMARY

Q2 2018 GRID MODERNIZATION ACTION

In the second quarter of 2018, 42 states plus DC took a total of 302 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 302 actions catalogued, the most common were related to policies (85), studies and investigations (48), and planning and market access (48).

Table 1. Q2 2018 Summary of Grid Modernization Actions

Type of Action	# of Actions	% by Type	# of States
Policies	85	28%	31 + DC
Studies and Investigations	48	16%	27 + DC
Planning and Market Access	48	16%	19 + DC
Deployment	46	15%	24
Business Model and Rate Reform	43	14%	19 + DC
Financial Incentives	32	11%	11
Total	302	100%	42 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 2018

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

Massachusetts Regulators Issue Decision on Utility Grid Modernization Proposals

The Massachusetts Department of Public Utilities (DPU) issued a decision on the grid modernization investment proposals put forward by Eversource, National Grid, and Unitil. While the DPU approved certain grid modernization investments for each utility, it denied approval for full AMI deployment by the utilities, finding it not to be cost-effective. Instead, the DPU will later consider proposals for more targeted AMI deployment.

New Jersey Becomes Fifth State to Adopt an Energy Storage Target

In May 2018, with the signing of A.B. 3723, New Jersey became the fifth state to adopt an energy storage target. The legislation directs the Board of Public Utilities to undertake an energy storage study and establish a process and mechanism for reaching 600 MW of energy

energy, grid services, and other benefits provided by the microgrid. The Public Utilities Commission opened a proceeding in July to develop the microgrid services tariff.

Pennsylvania Legislators and Regulators Addresses Alternative Ratemaking

In May 2018, the Pennsylvania Public Utilities Commission issued a proposed policy statement related to alternative ratemaking methodologies. The statement lays out several considerations for distribution rates that encourage efficiency and the use of distributed energy resources. The state legislature also enacted a bill in June 2018 that authorizes the Commission to approve alternative ratemaking mechanisms.

MOST ACTIVE STATES AND SUBTOPICS OF Q2 2018

The most common types of actions across the country related to advanced metering infrastructure rules (27), followed by energy storage deployment (25), utility business model reforms (21), data access (17), and grid modernization investigations (17). The total number of grid modernization actions being taken by states exploded in the first half of 2018, with actions rising to a total of 302 in Q2 2018.

The states taking the greatest number of actions related to grid modernization in Q2 2018 can be seen in Figure 4. New York, California, and Massachusetts continued to see the most action during the quarter, followed by Hawaii, Minnesota, and New Jersey. Overall, 42 states and DC took actions related to grid modernization during the quarter – the greatest number yet.

TOP GRID MODERNIZATION TRENDS OF Q2 2018

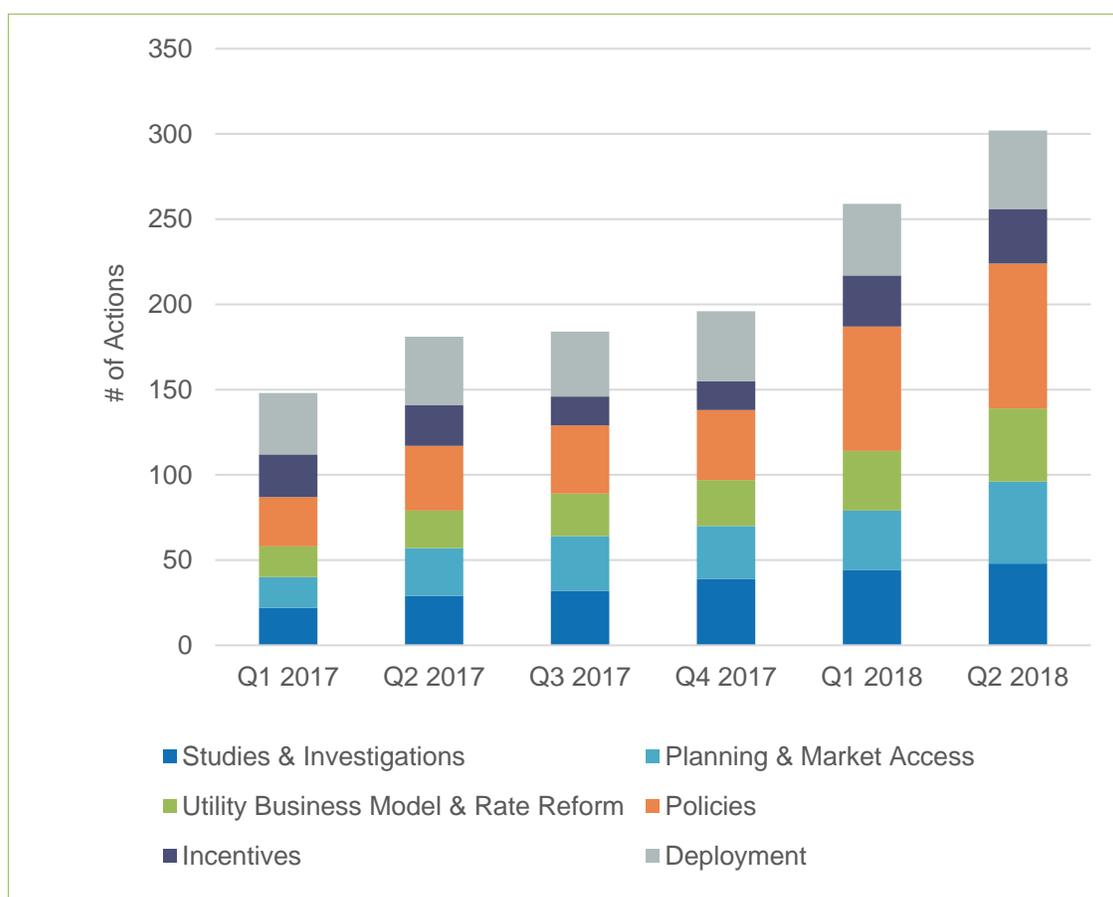
States Moving Toward More Holistic Utility Planning Processes

Several states are working toward integrating utility planning processes to create more holistic planning methods with an increased focus on distributed energy resources (DERs). In Hawaii, a proceeding investigating integrated grid planning is currently underway, while draft rules under consideration in Missouri would incorporate DERs into utility resource planning, as well as transmission and distribution system analyses. In Washington, draft distribution system planning rules establish a “cross-functional” planning approach that would plan for system needs through investments in generation, DERs, and infrastructure investments. A proposed settlement that was ultimately not approved in North Carolina would have adopted a new integrated system operations planning process. This process would have coordinated planning for generation, transmission, and distribution system resources, including DERs and non-wires alternatives.

Utilities Requesting Special Ratemaking Treatment for Grid Investments

While cost has been a major issue surrounding utility-proposed grid modernization investments, cost recovery mechanisms are also proving to be of significant importance and contention. Several utilities are requesting special ratemaking treatment, including new riders, for costs associated with large grid investment packages. Duke Energy proposed new grid riders in both its Kentucky and North Carolina service territories; however, regulators in both states found that the proposed investments did not justify recovery through a rider mechanism. Duke Energy Ohio also proposed a rider to recover PowerForward grid modernization costs, while an Ohio regulatory decision approving a grid investment rider for FirstEnergy has been appealed. Atlantic City Electric in New Jersey proposed a new rider for recovery of its proposed grid investments, and the Hawaiian Electric Companies requested recovery of their Phase I grid modernization costs through the existing Major Project Interim Recovery mechanism. In Massachusetts, the Department of Public Utilities approved the use of a targeted cost recovery mechanism for the distribution utilities' grid modernization capital and O&M costs, and specified that these costs should be recovered through a volumetric rate, rather than a fixed or demand charge.

Figure 2. Total Number of Grid Modernization Actions by Quarter



Utilities Propose AMI Opt-Out Fees, While States Consider Prohibiting Fees

In Q2 2018, state regulators considered at least eight AMI opt-out fee proposals put forward by utilities. The proposed fees included one-time charges of up to \$150 and monthly fees of up to \$25.89. Notably, one proposal, from Interstate Power and Light in Iowa, requires customers opting out of AMI installation to provide manual meter readings to the utility each month. Meanwhile, at least five states considered legislation during the quarter that would prohibit utilities from charging additional fees to customers opting out of AMI installation. Multiple states, including Iowa, Kansas, and Washington, have opened regulatory proceedings to investigate AMI opt-out policies.

Figure 3. Most Common Types of Actions Taken in Q2 2018

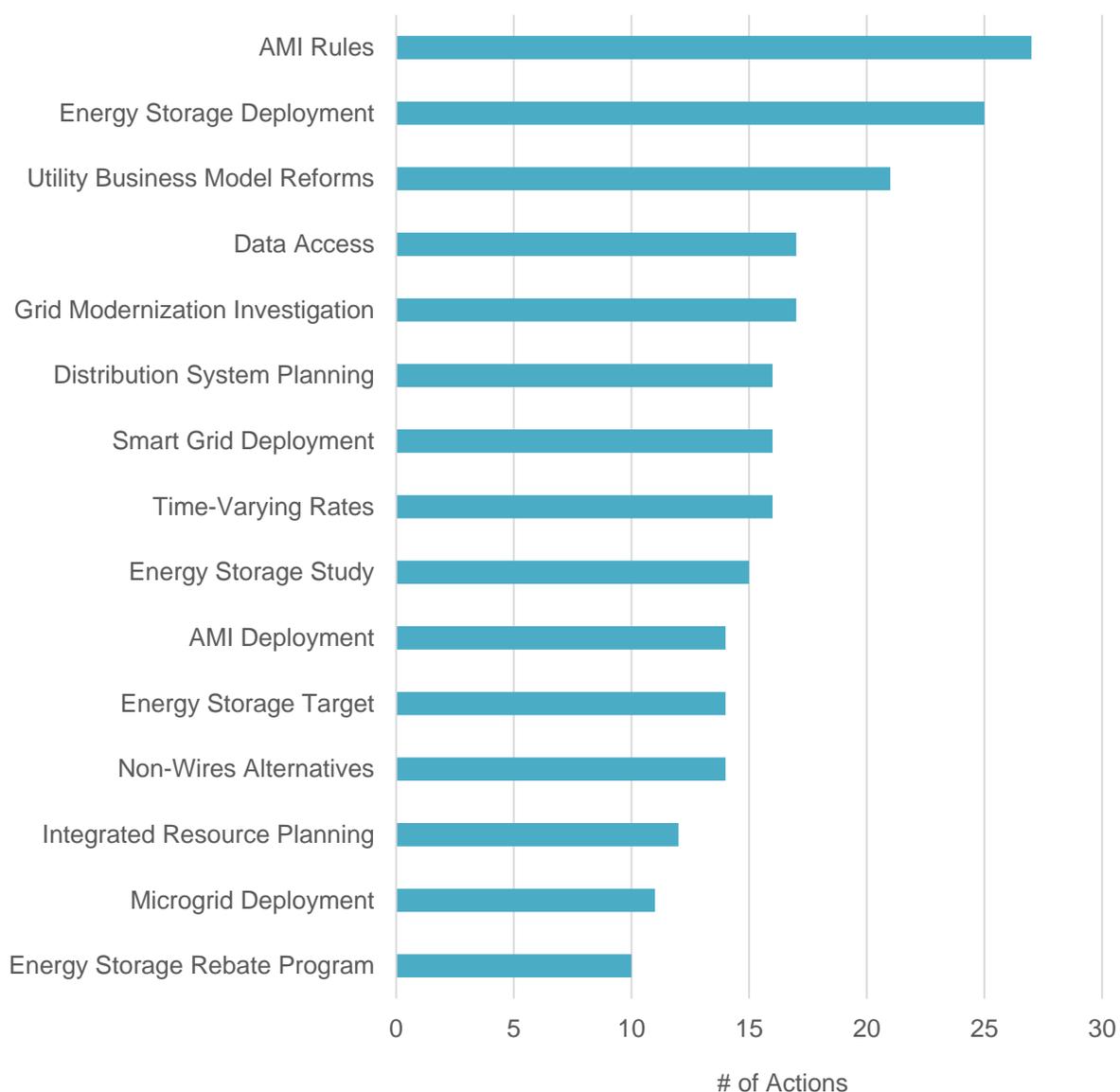
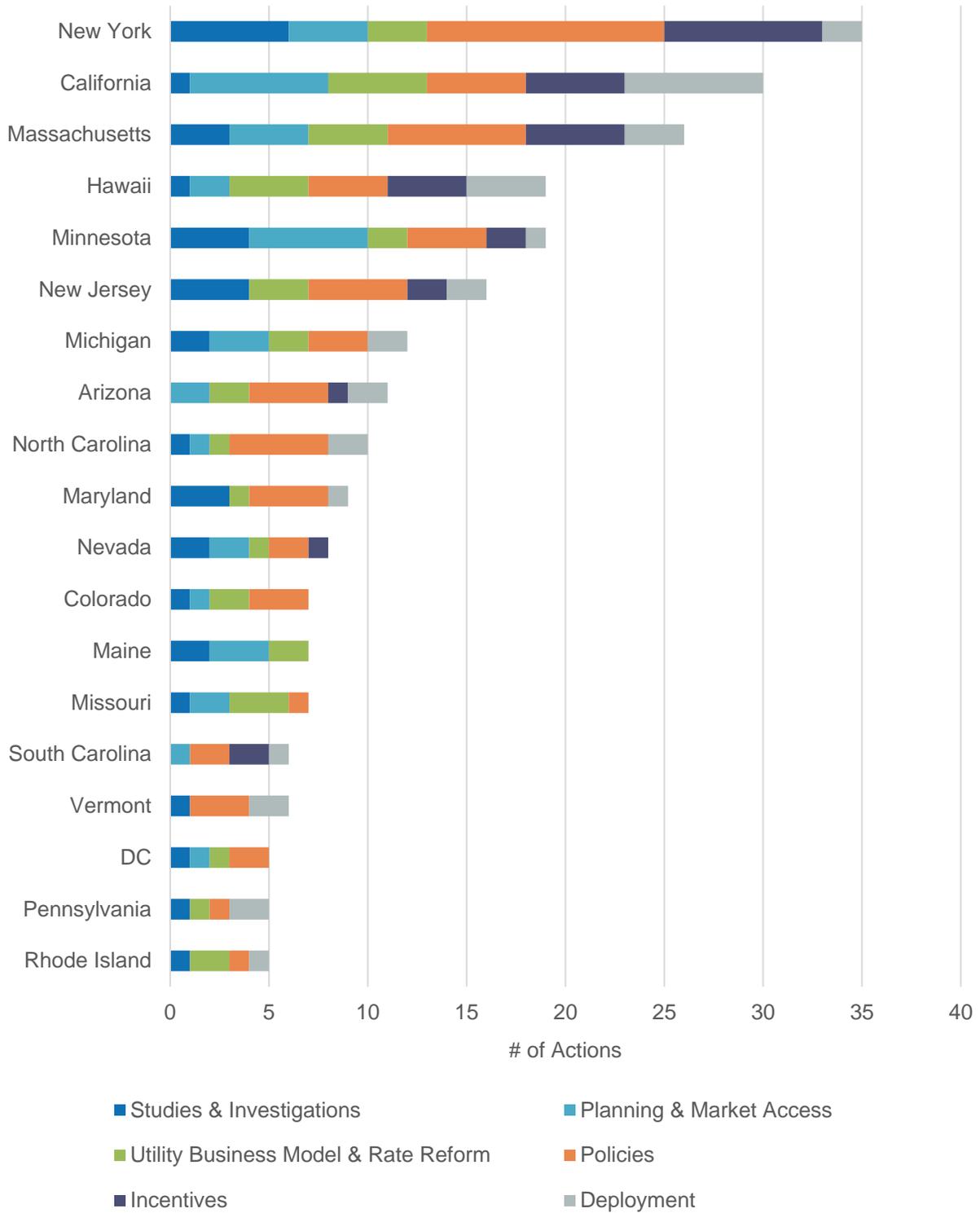


Figure 4. Most Active States of Q2 2018



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
- A separate Excel file including all actions, descriptions, and links to original sources
- Summary maps of action for each policy category above, including a separate Powerpoint file of all summary maps
- 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, saving weeks and thousands of dollars in staff time. At a cost of \$500 per issue (or \$1,600 annually), the 50 States of Grid Modernization offers an significant time and financial savings. With direct links to original sources for all actions, customers may stay on top of legislative and regulatory developments between quarterly reports.

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- Learn about the approaches being taken by other utilities facing similar opportunities and challenges
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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

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