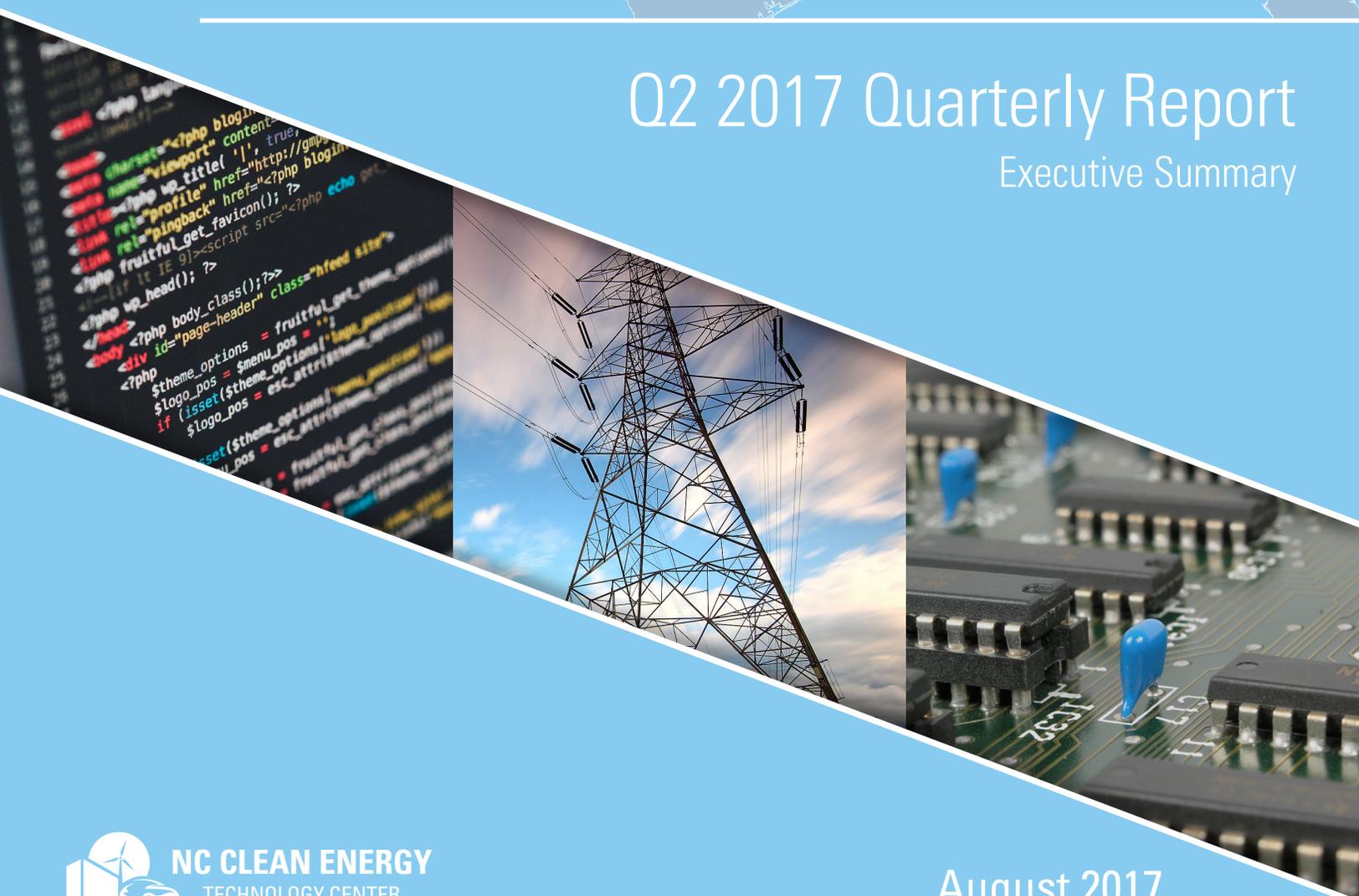


50 States of GRID MODERNIZATION

Q2 2017 Quarterly Report
Executive Summary



AUTHORS

Autumn Proudlove
Brian Lips
David Sarkisian
Achyut Shrestha

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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Previous editions of *The 50 States of Grid Modernization* are available for download at www.nccleantech.ncsu.edu/the-50-states-reports/ or by clicking here:

- Q1 2017: [Full Report](#) | [Executive Summary](#)

In addition to *The 50 States of Grid Modernization*, the NC Clean Energy Technology Center publishes a quarterly report called *The 50 States of Solar*. Previous editions of *The 50 States of Solar* are available for download at www.nccleantech.ncsu.edu/the-50-states-reports/ or by clicking here:

- [Q1 2017 Executive Summary](#)
- [Q4 2016 and 2016 Policy Review – Executive Summary](#)
- [Q3 2016 Executive Summary](#)
- [Q2 2016 Executive Summary](#)
- [Q1 2016](#)
- [Q4 2015 and 2015 Policy Review](#)
- [Q3 2015](#)
- [Q2 2015](#)
- [Q1 2015](#)
- [Q4 2014](#)

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 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 stakeholders and regulators in the industry.

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 deployment of 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 intended to soon become a default option. 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, interconnection standards, and energy storage compensation 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 will be covered. 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 2017 GRID MODERNIZATION ACTION

In the second quarter of 2017, 36 states plus DC took a total of 181 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 181 actions catalogued, the most common were related to deployment (40), followed by policies (38), and studies and investigations (29).

Table 1. Q2 2017 Summary of Grid Modernization Actions

Type of Action	# of Actions	% by Type	# of States
Deployment	40	22%	20
Policies	38	21%	19
Studies and Investigations	29	16%	19 + DC
Planning and Market Access	28	15%	15 (+ 3 RTOs)
Financial Incentives	24	13%	11
Business Model and Rate Reform	22	12%	14
Total	181	100%	36 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 2017

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

Massachusetts DOER Adopts 200 MWh Energy Storage Target

In June 2017, following the completion of a detailed [energy storage study](#), the Massachusetts Department of Energy Resources [adopted](#) a mandatory energy storage target of 200 MWh to be met by January 2020. [Pending legislation](#) calls for the Department to establish a subsequent target to be reached by January 2025 and 2030. Massachusetts is the third state to adopt a formal energy storage target.

Nevada Enacts Suite of Energy Storage and Grid Modernization Bills

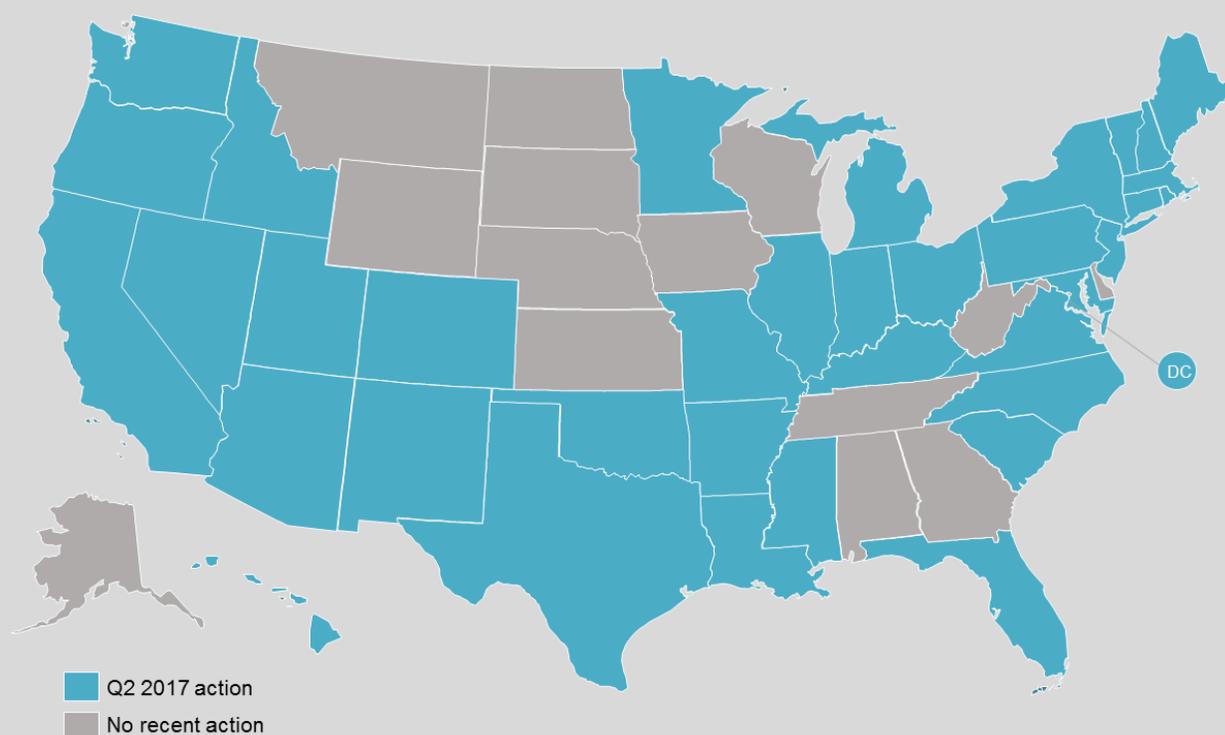
In Q2 2017, Nevada’s Governor signed multiple bills relating to energy storage and grid modernization into law. The enacted legislation includes an [energy storage study](#), a potential

[energy storage target](#), an energy storage [rebate program](#), and amendments to the [integrated resource planning](#) process.

Vermont Launches Grid Modernization Proceeding

Vermont became the latest state to [initiate](#) a grid modernization proceeding, with the Public Utility Commission (formerly the Public Service Board) [opening a docket](#) in June 2017. The Commission is looking to reexamine the state’s regulatory structure in response to recent transformations in technology, state policy, and more.

Figure 1. Q2 2017 Legislative and Regulatory Action on Grid Modernization



Maryland and North Carolina Initiate Energy Storage Studies

In June 2017, the North Carolina state legislature passed [H.B. 589](#), a broad solar policy reform bill which also includes a directive for the North Carolina Policy Collaboratory to conduct an energy storage study upon raising \$75,000 in non-state matching funds. In late July, Governor Cooper signed H.B. 589 into law. The Maryland legislature also initiated an energy storage study with the signing of [H.B. 773](#) in May. Maryland’s study will examine regulatory reforms and market incentives to encourage storage deployment.

Hawaii Utilities File Revised Grid Modernization Plan

In late June 2017, Hawaii's investor-owned utilities submitted their [revised grid modernization plan](#), after the Public Utilities Commission rejected the utilities' original plan in January 2017. The new plan comes in at about \$205 million, as opposed to the \$340 million estimated for the original plan. The new plan includes a near-term (2018-2023) Grid Modernization Roadmap, which focuses on mitigating current service quality issues to allow for greater adoption of distributed energy resources.

MOST ACTIVE STATES AND SUBTOPICS OF Q2 2017

The ten states taking the greatest number of actions related to grid modernization in Q2 2017 can be seen in Figure 2. New York and Massachusetts saw the most action during the quarter with 25 and 16 actions, respectively. The most common types of actions across the country were advanced metering infrastructure deployment (19 actions), smart grid deployment (13), and grid modernization investigations (13).

Figure 2. Most Active States of Q2 2017

