GRID MODERNIZATION EFFORTS AT THE STATE LEVEL: IMPLICATIONS FOR UTILITIES

While legislative and other regulatory bodies have always been instrumental in determining how electric utilities operate in the U.S., recent advances in technology are now being viewed by these bodies as "opportunities" to "reshape" utilities and how they operate even more than they have in the past. As such, it is important for utilities to remain abreast of these trends and their subsequent implications.

For a number of years, the North Carolina Clean Energy Technology Center (CETC), a think tank based at North Carolina State University, has been releasing a quarterly report called "50 States of Solar," which tracks solar policymaking at the state level around the nation.

In May 2017, CETC released its first-ever quarterly "50 States of Grid Modernization" report. This report is designed to be a quarterly "policy tracker" that outlines regulatory and legislative efforts related to grid modernization in the 50 states.

In the introduction to the report, the authors noted that they use the term "grid modernization" broadly, to refer to actions making the electricity system more resilient, responsive, and interactive. Specifically, in the report, the term is intended to include seven topics: smart grid and advanced metering infrastructure, utility business model reform, regulatory reform, utility rate reform, energy storage, microgrids, and demand response.

The purpose of the quarterly reports are to provide state lawmakers and regulators, as well as other stakeholders, with timely and unbiased updates on how states are choosing to study, adopt, implement, amend, or discontinue policies associated with grid modernization. The report catalogs proposed and enacted legislative, regulatory, and rate design changes that affect grid modernization during the most recent quarter.

The first quarter's report found that 37 states, plus the District of Columbia, took a total of 148 policy and deployment actions related to grid modernization.

These fell into several categories:

- 36 (24%) involved Deployment of Advanced Grid Technologies,

- 29 (20%) involved Grid Modernization Policies,

- 25 (17%) involved Financial Incentives,

- 22 (15%) involved Studies and Investigations,

- 18 (12%) involved Utility Business Model and Rate Reform, and

- 18 (12%) involved Planning and Market Access.

Deployment of Advanced Grid Technologies: The report noted that, "While most states are still investigating or proposing policy and regulatory changes to better enable the use of advanced grid technologies, many utilities are already deploying these technologies." Advanced metering infrastructure (AMI) is the technology that has seen the most deployment so far, largely because it provides significant financial savings and is necessary for the implementation of many new rate structures.

Grid Modernization Policies: The report noted that, "There are many different ways in which states may regulate and promote advanced grid technologies. Several states are currently considering changes to existing policies to clarify their impact on energy storage and other technologies." States are also considering adopting new policies, such as energy storage mandates.

Financial Incentives: According to the report, such incentives include tax credits, property and sales tax exemptions, grant programs, rebate programs, loan programs, and Property Assessed Clean Energy (PACE) financing programs.

Studies and Investigations: While all of these trends should be of interest to utilities, this particular trend, which is often the first of the six that states undertake, should be of paramount concern. The report noted that, "As new technologies enter the market, policymakers see opportunities to strengthen the grid and enhance the customer experience." However, policymakers also see significant challenges to the prevailing utility business model and potential risk in substantial capital investments. As a result of this uncertainty, policymakers in a number of states have chosen to begin with studies to investigate energy storage, grid modernization, alternative utility business models, and rate reform.

Utility Business Model and Rate Reform: The report noted that, "Utility rate design, particularly for residential customers, has typically consisted of a fixed customer charge, plus a flat per-kWH rate for energy consumed during the billing period." Many commercial and industrial rates also include a demand charge, based on the customer's maximum kW demand during the billing period. However, these charges have rarely been mandatory for residential customers. The report added, "As technological advancements are made, traditional utility business models, regulatory frameworks, and rate designs are being reformed in many parts of the country."

Planning and Market Access: The report noted that, "As the role of energy storage and other distributed energy resources increases within our energy system, many are realizing that current utility planning methods do not adequately capture the full costs and benefits of these resources."

In terms of the actions being taken in these six areas, the ten most active states during Q1 2017 were: New York (17 actions), Hawaii (16 actions), California (13 actions), Massachusetts (12 actions), Colorado (9 actions), Maryland (8 actions), and North Carolina, Maine, Nevada, and Michigan (5 actions each).

The most common types of actions in all 50 states were: AMI Deployment (19 actions), Smart Grid Deployment (13 actions), Time-Varying Rates (10 actions), AMI Rules (9 actions), Energy Storage Target (9 actions), and Grid Modernization Investigation (9 actions). Other actions included Microgrid Deployment, Energy Storage Deployment, and Rate Reform Study (7 actions each); and Energy Storage Rebate, Energy Storage Tax Credit, Integrated Resource Planning, Microgrid Rules, and Energy Storage Study (6 actions each).

ABOUT THE AUTHOR

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