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Opportunities for governors to align electricity markets with state energy goals

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ABSTRACT

Electric utilities are facing a fundamental challenge to their long-term viability. New categories of business models are emerging to address challenges to utility profitability from rate-of-return regulation, adjustments to rate-of-return that reduce revenue loss, added profit opportunities, and transformative models. Governors can play an important role by convening stakeholders and encouraging thoughtful conversations and pilot programs to assess the options for managing the transitions underway in the electricity sector.

1. A changing industry: implications for state policy

The electricity sector is confronting new technologies, policies, and demands that are creating challenges for the traditional utility business model and providing opportunities for new energy technologies and services. A primary challenge to utilities' business models is the declining growth of electricity sales. Electricity demand is projected to increase at a rate of 1% per year, which is roughly half the historical rate.[1] The U.S. Energy Information Administration has identified the main drivers for this reduced growth as higher energy efficiency standards, slowing population growth, and structural changes in the economy.[2] At the same time, more and more corporations are purchasing clean energy, with 60% of Fortune 100 companies setting clean energy purchasing commitments, and those purchases are typically made even when regulated utilities have no opportunity to profit.[3] In a recent survey, 97% of utility executives said they believed that their utility's business model must evolve, and executives generally viewed the existing regulatory model as the main obstacle to that evolution.[4] A suite of new ideas from utility executives and thought leaders are beginning to emerge.[5]

In both regulated and restructured markets, utility business models are based on a 100-year old model that was developed as the country was focused on promoting electrification. They concentrate on repaying investors for operating expenses and allowing investors to earn a return on prudent capital investments. In other words, the more power utilities sell and the more concrete they put in the ground, the more they earn. Some states have begun to change that model to reflect new goals and market developments, such as measures to decouple utilities' revenues from their sales volumes—but ratemaking continues to create incentives for utilities to invest capital in new transmission wire, distribution infrastructure, or power plants. Flat consumer demand and the growth of distributed energy resources such as rooftop solar, storage, and demand response may reduce the amount of power sold and the need for future utility capital investments, forcing a rethinking of current regulatory frameworks.

Thus far, most utilities have remained economically viable despite declining sales growth because of record high levels of

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[1] U.S. Energy Information Administration, "Annual Energy Outlook 2013," Today in Energy, https://www.eia.gov/todayinenergy/index.cfm?tg=aeo2013%20(annual%20energy%20outlook%202013) (accessed June 13, 2016).

[2] U.S. Energy Information Administration, "U.S. Economy and https://www.eia.gov/todayinenergy/detail.cfm?id=10491 Electricity Demand Growth."

[3] For information about corporate interest in and principles concerning clean energy purchasing, see the Corporate Renewable Energy Buyers' Principles website at http://buyersprinciples.org/about-us/.

[4] Utility Dive, 2016 State of the Electric Utility Survey.

[5] For instance, an array of white papers from utilities and thought leaders has been convened under the 51st State initiative that Smart Electric Power Association has organized and posted at http://sepa51.org/.

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1040-6190/

capital expenses and their cost of capital has declined more slowly than the state-allowed rate of return (ROR).[6] If state regulators eventually adjust the ROR to reflect the lower cost of capital, utilities will confront higher costs, declining sales, and lower profit margins. If utilities compensate by significantly increasing electricity rates, customers would have a greater incentive to find alternative sources of supply or reduce their demand (see the text box "Game-Changing Technologies"). That potential dynamic—declining sales leading to higher costs leading to further declining sales—is referred to as the "utility death spiral."

Because utilities are state-regulated businesses that provide a basic necessity, state governments are being drawn into that issue, primarily through the debates underway in more than 20 state legislatures and public utility commissions (PUCs) about rates for distributed solar[7]—debates that have often become heated among solar customers, solar businesses, environmentalists, utilities, and consumer advocates. Most of the responses states are pursuing, including value-of-solar tariffs, increased fixed charges, and reduced rates for distributed solar, rebalance the payments between utilities and solar customers but do not resolve the more fundamental underlying challenge of reduced utility profit opportunities.

Game-changing technologies

The following technologies are changing the economic landscape for utilities:

- Distributed generation: Electric power generation on the customer side of the electric meter, primarily rooftop solar.
- Energy efficiency: Technologies that use less energy to perform the same functions, such as LED lighting.
- Demand response: Reductions in electricity demand and usage relative to normal consumption patterns in response to price signals, incentive payments or information.
- Advanced metering infrastructure: An integrated system of smart meters and data-management systems that enables two-way communication between customers and electric utilities (or third-party providers); the detailed data can be used to increase energy efficiency and conservation.

Technologies that may impact the system in the new future include:

- Advanced energy storage: as advanced technologies that can capture and store energy efficiently (such as batteries) become more affordable, they can store increasing amounts of energy from variable sources, such as wind and solar power, thereby dramatically increasing the functionality of those sources by allowing them to meet demand even when the wind is not blowing or the sun is not shining.
- The Internet of things: having devices that are connected to each other and whose operations can be controlled over the internet allows greater system efficiency. For example, a "smart" thermostat can learn from a smartphone location when the house is unoccupied and can manage the home appliances to reduce wasteful demand.

Some analysts say that no additional incentives are needed and that utilities can manage the reduced demand for electricity by improving their cost management, instead.[8] As economist Alfred Kahn observed, "All regulation is incentives," meaning that utilities are motivated to comply with state energy policies because otherwise they risk losing state regulatory protection. Other analysts say that the decoupling and solar net metering debates show that utilities may be willing to comply with state law but are also likely to oppose their expansion when those laws undermine their profitability.[9]

In states where policymakers choose to engage utilities as drivers of advanced technology, regulatory reforms are necessary. PUCs can pursue modest adjustments to utility business models, but commissioners typically interpret their statutory authority narrowly and are unlikely to pursue more fundamental reform without direction from governors and state legislatures. Governors can play a critical role in initiating conversations and providing policy direction for managing the rapid changes in this critical industry.

2. Markets and monopolies: lessons from the streetcar and other transformed industries

The electricity sector is not the first regulated industry to face competition from new technologies. The cable television industry, for example, was a regulated monopoly that faced dramatic declines in sales when satellite TV emerged. State regulators did not protect existing cable monopolies from the new technology, and some companies went out of business, but the sector as a whole successfully diversified its offerings to add valuable new services such as internet and phone, which now make up the majority of the industry's revenue.[10]

In contrast, when the streetcar industry faced rising competition from buses and cars, it did not innovate its services.[11] When a state commission declined to allow higher rates for one streetcar company, ensuring that the company would not recover some of its fixed costs, the company appealed the decision to the U.S. Supreme Court, arguing that public utilities had a constitutional right to recover the costs of the system they had built. The court, however,

[6] Data on the utility industry capital trends can be found in Edison Electric Institute, Financial Review 2016—Industry Financial Performance (Washington, DC: Edison Electric Institute, 2016).

[7] Benjamin Innskeep et al., The 50 States of Solar: Q1 2016 Quarterly Report (Raleigh, NC: Clean Energy Technology Center, 2016), https://nccleantech.ncsu.edu/n-c-clean-energy-technology-center-releases-q1-solar-policy-update-to-the-50-states-of-solar-2 (accessed Sept. 14, 2016).

[8] For instance, cost savings can be achieved by (1) raising the productivity at the front line (for example, optimized communications), (2) reducing external spending (for example, taking advantage of purchasing power across divisions), (3) restructuring and streamlining organizations and (4) pruning assets through periodic portfolio reviews (for example, shifting to low-cost fuels, locking in long-term fuel contracts). Utilities can take those steps on their own, or utility regulators can encourage them. In addition, utility regulators can encourage steps to optimize the larger grid with efforts that reduce costs for utilities. Examples of grid-wide efficiency improvements are listed in Steven Nadel and Garrett Herndon, "The Future of the Utility Industry and the Role of Energy Efficiency," American Council for an Energy-Efficient Economy Summer Study on Energy Efficiency in Buildings (2014), p. 22–24, http://aceee.org/files/proceedings/2014/data/papers/8-138.pdf (accessed Sept. 14, 2016).

[9] Ron Binz and Ron Lehr, "Utilities 2020: Exploring Utility Business Models and the Regulatory Changes Needed to Transform Them," http://www.rbinz.com/Utilities%202020.pdf (accessed September 14, 2016).

[10] E. Graffy, "Disruptive Competition http://www.seventhwave.org/sites/default/files/elj-article-summary2.pdf".

[11] Ibid.