

Selected Issues in Power Sector Transformation

Brief Analysis and Potential Solutions

Regulatory Assistance Project

Introduction

Rapid advances in technology and rapid reductions in the cost of renewable energy mean that many states are facing the future with a power sector better suited to the past.

Some utility regulators recognize this and are anticipating how industry trends and policy drivers will affect the electricity system in their jurisdictions. Decision-makers in many other states are just beginning to consider whether changes to the energy sector could better accommodate trends such as beneficial electrification and support new objectives.

RAP developed brief analyses of several topic areas to help regulators frame the challenges they face and steps they could take in response. We focus here on some elements that offer significant potential to benefit the public and the environment while enabling efficient energy delivery: utility incentives, industry structure, distributed energy resources, retail choice, equity, and carbon reduction.

Each section in this policy brief concludes with a set of questions stakeholders can discuss as they consider the path toward power sector transformation.

The analysis we offer emerged from RAP's work—led by Associate Jessica Shipley—to help stakeholders in Oregon articulate issues facing that state's energy sector, recognize potential problems, and prioritize options to consider. Yet these areas of inquiry are relevant anywhere that leaders are seeking to meet the energy challenges of the future.

We focus on elements that offer significant potential to benefit the public and the environment while enabling efficient energy delivery:

- *Utility incentives;*
- *Industry structure;*
- *Distributed energy resources;*
- *Retail choice;*
- *Equity; and*
- *Carbon reduction.*

Utility Incentives

An incentive structure based on cost of service and rate of return no longer aligns the utility's financial interests with key public interests (e.g., promoting conservation, reducing carbon emissions, optimizing for the most cost-effective system, and increasing access and equity). The existing incentive structure may not motivate utilities to anticipate and embrace innovation and may instead promote risk-averse behavior.

Potential Solutions

The traditional rate-making approach has worked to encourage utility capital investment in the electric system by providing a profit incentive via a rate of return on those investments. Such incentives were necessary to encourage adequate investment to reach all customers with safe and reliable service. Today, conservation measures and distributed energy resources are curbing load growth, requiring less need for large-scale utility investments and putting pressure on utilities' ability to generate returns for shareholders. Changing policy objectives are putting new expectations on utilities. And technology innovations are changing what customers want from the power system.

To address these issues, the options—which are not mutually exclusive—include:

- Shifting from a cost-of-service model to an altered model (e.g., wherein revenues are not dependent on commodity sales) augmented by performance-based rate-making;
- Requiring or incentivizing utilities to pursue service-oriented or small-scale (e.g., non-wires) solutions that would reduce costs for customers but may or may not be allowed to earn a rate of return; and
- Expanding customer choices in ways aligned with policy goals and promoting innovation.

Questions for Discussion

- What would be some important first steps for regulators to consider if they were to pursue performance-based incentives?
- What are some of the most important public interests that ought to be promoted through utility sector actions?
- Should these same public interests inform the creation of new customer choice options?
- Should promoting electricity system economic efficiency be the most important objective?
- In states with a vertically integrated industry structure, should regulators consider shifting toward a performance-based model of utility compensation regardless of whether the vertically integrated structure is retained? In other words, if regulators pursue greater competition in generation assets, should they still investigate performance incentives for distribution investments and expenses?

Industry Structure

A vertically integrated industry structure, where the utility owns and develops generation assets, may not promote the most cost-effective outcomes.

Potential Solutions

Generation development and ownership are widely understood to no longer have the same natural monopoly characteristics they once did. Some argue that introducing more competition in generation ownership will encourage innovation and lead to more efficient outcomes.

Options—which are not mutually exclusive—include:

- Considering whether and how to require utility divestment of existing generation assets;
- Requiring that a minimum percentage (or all?) of new power sources be purchased from third-party providers rather than utility-owned; and
- Exploring options and potential customer benefits from broader participation in wholesale electricity markets beyond existing market structures.

Questions for Discussion

- How should decision-makers determine what industry structure (specifically around generation ownership) is best suited to advance state goals and regulators' core guiding objectives for safety, reliability and affordability?
- Is full deregulation of generation possible without a regional wholesale market? If not, what steps, if any, should a state take to facilitate the formation of a regional transmission operator?
- If non-utility actors were allowed to play a larger role in electricity generation, what safeguards would be needed to ensure that state policy objectives are met (e.g., carbon reduction goals)?

Distributed Energy Resources

Customers in some states have limited options to procure distributed energy resources (DERs) such as solar, energy storage, demand response, and energy efficiency. They also may have few options to participate in DER programs offered by utilities or third parties and to be fairly compensated for the net value of those resources to the utility system. Some customers lack optional rate plans that could minimize their electricity bills or allow them to provide value-added energy services to the grid.

Potential Solutions

DERs can provide customers with options to manage their energy use and their electricity bills and can provide valuable services to the electric grid. Electric rates can be designed so customers are

encouraged to minimize their own bills, either with DERs or by shifting their usage, while minimizing their contribution to system costs and providing value to the grid.

Customer choice in distributed energy services can help move other objectives forward, such as conservation and carbon reduction. It has also been noted that accelerating technology developments in this area may offer customers new and more sophisticated options at a pace that may outstrip regulatory management to address their implications.

Ideas to consider—not mutually exclusive—include:

- Implementing performance metrics and incentives for some or all of the following:
 - Utilities to provide, directly or through a third party, distribution services like demand response (where utilities only pass through these expenses today and therefore do not earn a rate of return);
 - Utility investments (e.g., advanced metering infrastructure and billing software enhancements) that enable time-varying rate designs; and
 - Utilities to develop innovative rate designs that manage customer loads and reduce system costs;
- Exploring implications of moving toward time-of-use (TOU) rates for all customers (e.g., the default tariff would be TOU with an opt-out option) wherever the necessary metering technology is in place;
- Requiring or incentivizing utilities to enable third-party aggregators and service providers to work directly with customers or communities (for energy efficiency, storage, demand response, distributed generation, charging infrastructure, etc.); and
- Overhauling or streamlining the regulatory approval process for certain types of pilot programs and efforts (e.g., for deployment of new or innovative technology, where costs are below a certain threshold).

Questions for Discussion

- Are changes needed to better inform and educate customers on their existing options?
- Should utilities control and manage new energy service offerings so that what's offered supports increased economic efficiency of the grid (load management) and leads to affordable rates overall? Or should the market and customer desires drive what energy services are provided, and by whom, with the utility system playing a reactive role (unplanned deployment of DERs)?
- Should customer choices be designed to provide a benefit to the utility system as a whole so all customers benefit?
- Should the default rate plan in a customer class be the one that minimizes costs for the greatest number of customers in that class, the one that minimizes system costs, or something else?

Retail Choices

Customers may have limited ability to choose an energy supplier other than their local utility and to buy renewable energy from their utility or third parties at levels higher than state-mandated minimums.

Potential Solutions

The ability to choose an energy supplier other than the incumbent utility is one form of competition and customer choice that could promote new and different objectives from the utility system. There is some indication this type of customer choice could provide more specialized services, including choices about generation sources for customers interested in purchasing more renewable energy than their utility offers or state policy requires.

Options—not mutually exclusive—for next steps include:

- Giving all customers the ability to choose to purchase 100 percent bundled renewable energy, or any level above state-mandated minimums, either from their utility or a third party;
- Enabling community choice aggregation (CCA), whereby a community assumes responsibility for procuring the energy resources to meet its needs, but the distribution utility continues to own, operate, and plan the distribution system. For customers and communities that do not opt for CCA, the utility continues to provide generation, transmission, and distribution services;
- Expanding direct access to more customers without making it universal; and
- Enacting retail choice for all customer classes.

Questions for Discussion

- What is missing from the options that customers currently have to purchase renewable energy? Could existing voluntary programs be reworked to meet customer choice goals, or does the system need to be reformed so customers have the ability (either individually or as a group such as in CCA) to procure renewable energy from a supplier and have it delivered via the distribution utility?
- Should utilities procure renewable energy on behalf of customers, or should customers be allowed to purchase renewable energy directly from generators or third parties? What are the potential benefits of either approach?
- How can we ensure that these choices will result in additional building and delivery of renewable resources and energy?
- If more customer choices are contemplated, how can regulators ensure some customers are not left with stranded assets and costs as others opt out of basic utility energy supply service?
- Should regulators be concerned that the choices given to customers support other guiding principles, such as reliability, and other policy objectives, such as carbon reduction?

Equity

Low- and moderate-income customers and members of communities experiencing environmental injustice face a disproportionate burden that can make electricity service unaffordable or inaccessible. In addition, it is difficult for citizens, and low-income groups in particular, to participate fully and meaningfully in regulatory proceedings.

Potential Solutions

Utility commission principles of non-discriminatory, universal service can broadly lead to affordable rates but also to inequities at a household level. Disadvantaged and low-income communities find it particularly difficult to meaningfully engage in regulatory processes and influence outcomes.

Options—not mutually exclusive—for addressing these challenges include:

- Creating a specific tariff or bill discount program for low-income customers or multi-family housing customers;
- Capping electricity bills;
- Providing additional funding for low-income residential weatherization;
- Undertaking a proceeding such as a series of workshops to identify the priority equity issues so stakeholders can help regulators determine a course of action;
- Creating utility performance metrics to target certain issues, such as reducing disconnections, encouraging the spread of DERs in rural communities, upgrading resiliency in vulnerable communities, and increasing workforce diversity;
- Adopting procedural guidelines for a more inclusive public process and for how equity goals and impacts on low-income ratepayers will be incorporated into rule-making and decision processes;
- Creating a fund to help low-income and environmental justice advocates participate knowledgeably in regulatory processes; and
- Creating new intervener funding for low-income and environmental justice advocates.

Questions for Discussion

- Is it possible to articulate how much cost-shifting, and what kind, is acceptable to mitigate the energy burden of low-income residents?
- Do utility regulators have the authority to mitigate affordability and equity concerns for low-income ratepayers?
- What first steps should regulators consider if they choose to pursue performance-based incentives in this area?

Carbon Reduction

In many places, the current regulatory structure does not adequately require or incentivize utilities to help states meet overall climate change goals. This is the case where regulators lack the statutory authority to require carbon emissions reductions.

Potential Solutions

Some states lack legislative mandates to reduce greenhouse gas (GHG) emissions and decarbonize their economies, and therefore utilities and all other actors in these jurisdictions lack legal requirements to reduce emissions.

Ideas—not mutually exclusive—for how to address these issues include:

- Ensuring regulators have the authority to set and enforce GHG goals for utilities;
- Setting statewide binding GHG limits and giving utility regulators authority to implement these within the energy sector; and
- Giving regulators authority to aid achievement of statewide GHG reduction goals beyond direct emissions in the utility sector through utility sector actions and investments—for example, in electrification of transportation.

Questions for Discussion

- Would a legislatively adopted cap on GHG emissions provide an adequate basis for utility regulators to implement a decarbonization objective? Or should regulators be given explicit authority to set and enforce GHG limits for utilities, independently of whether the state adopts broad carbon policy?
- How might utility regulators' specific, independent role in decarbonization be defined? In other words, what would be their objectives?
- Regardless of whether legislators adopt comprehensive carbon policy, should the electric sector be encouraged or required to assist in decarbonizing other sectors such as transportation? If so, what parameters and objectives should define utility regulators' role in this area?
- What roles are appropriate for utility regulators versus other state agencies?

Additional Resources

Related papers, reports, and research from RAP

Beneficial Electrification: Ensuring Electrification in the Public Interest

<https://www.raonline.org/BE>

Next-Generation Performance-Based Regulation: Emphasizing Utility Performance to Unleash Power Sector Innovation

<https://www.raonline.org/knowledge-center/next-generation-performance-based-regulation-emphasizing-utility-performance-unleash-power-sector-innovation/>

Revenue Regulation and Decoupling: A Guide to Theory and Application (inc. Case Studies)

<https://www.raonline.org/knowledge-center/revenue-regulation-and-decoupling-a-guide-to-theory-and-application-incl-case-studies/>

Smart Rate Design for a Smart Future

<https://www.raonline.org/knowledge-center/smart-rate-design-for-a-smart-future/>

Enabling Third-Party Aggregation of Distributed Energy Resources

<https://www.raonline.org/knowledge-center/enabling-third-party-aggregation-distributed-energy-resources/>

Recommendations for Ohio's Power Forward Inquiry

<https://www.raonline.org/knowledge-center/recommendations-ohios-power-forward-inquiry/>



Energy Solutions for a Changing World

The Regulatory Assistance Project (RAP)®
Belgium · China · Germany · India · United States

50 State Street, Suite 3
Montpelier, Vermont 05602
USA

1 802-223-8199
info@raponline.org
raponline.org