

Summary of Complementary Utility Regulatory Reform & Business Model Initiatives

Prepared by the Great Plains Institute & Xcel Energy for the e21 Initiative

The e21 Initiative is convened by:



The e21 Initiative is funded by the Energy Foundation, Xcel Energy, and Minnesota Power, with in-kind contributions from the Center for Energy and Environment and the George Washington University Law School

Across the US and abroad, there is a growing recognition among energy companies, regulators, and consumers that the regulatory models of the past are ill suited to address the needs of the future. Several efforts are underway to explore new ways to support investment and provide a sustainable business model for utilities while meeting public policy objectives, and provide pathways for energy consumers to actively participate in the energy system and economy.

Staff of the e21 Initiative surveyed these efforts and highlight below some of the potential ideas, outcomes, and lessons learned that could be useful for the Initiative and provide context for group discussion. Staff chose the following four processes to highlight while also providing additional background materials from other processes:

- *Massachusetts Electric Grid Modernization Stakeholder Working Group Process (MA Grid Modernization Working Group)*
- *Utility 2.0: Piloting the Future for Maryland's Electric Utilities and their Customers (Utility 2.0)*
- *Revenue=Incentives+ Innovation+Outputs (RIIO)*
- *Rocky Mountain Institute (RMI) collaboration with Pacific Gas & Electric (PG&E)*

While a review of these complementary efforts is helpful, it should be noted that the e21 Initiative is charting new territory as the first project in the US to tackle these issues with vertically integrated utilities.

PROCESS & OUTCOMES

MA Grid Modernization Working Group

In the Northeast, concerns about system reliability and storm response prompted discussions of needed regulatory changes for electric distribution companies. In October 2012, the Massachusetts Department of Public Utilities (DPU) opened an investigation into policies and regulatory models that will support enhanced investment in grid modernization technologies and practices looking at both 'grid-facing' and 'customer-facing' issues and opportunities. The DPU aimed to balance the need to improve reliability and efficiency of the grid while also "increasing customers' control of their own usage and reducing customer costs."¹

The Working Group outlined seven key areas of work, focused on developing: "(1) an understanding of the current status of the electric grid infrastructure as it relates to grid modernization; (2) modernization objectives and an implementation strategy for the grid-facing elements; (3) modernization objectives and an implementation strategy for customer-facing elements, including dynamic pricing structures; (4) an understanding of the costs and benefits of grid modernization; (5) an approach to cost recovery for grid modernization infrastructure; (6) an approach to customer engagement and acceptance; and (7) an approach to issues such as security, privacy, interoperability, and concerns about health effects."²

The Working Group issued its final report on July 2, 2013, which included proposals for comprehensive regulatory frameworks and targeted regulatory policies to encourage grid modernization efforts.³ Parties commented on the report prior to the matter being

¹ Massachusetts Grid Modernization Working Group website. <http://magrid.raabassociates.org/>

² Ibid.

³ Massachusetts Electric Grid Modernization Stakeholder Working Group Process (July 2, 2013). "Report to the Department of Public Utilities from the Steering Committee." <http://magrid.raabassociates.org/>

assigned to a hearing officer at the DPU.

In late December, the DPU issued an Order on the Working Group's report. In the Order, the DPU supported the objectives of the group and outlined ways to make progress on those objectives. Those objectives include: (1) reduce the effects of outages, (2) optimize demand, including reducing system and customer costs; (3) integrate distributed resources; and (4) improve workforce and asset management.

The DPU developed a strawman proposal that includes a requirement for utilities to develop a 10-year grid modernization plan including a comprehensive advanced metering plan. The DPU declined to adopt the new regulatory models and cost recovery frameworks identified by the Working Group, stating that, "After consideration, we have determined that grid modernization should become a new part of normal business practices for electric distribution companies, and the Department expects to evaluate many grid modernization investments in base distribution rate proceedings pursuant to the same standards as other capital additions."

In lieu of changes to the regulatory framework, the DPU proposal provides for preauthorization of the timing and scope of advanced metering investments and a possible tracker mechanism to recover those specific investments after they have been incurred. All investments will be subject to prudence and used and useful reviews.

Comments have been filed in response to the strawman proposal with hearings scheduled for late February. Several parties continue to support the regulatory changes described in the Utility of the Future, Today framework described later in this document.

Utility 2.0

Under the direction of Maryland Governor Martin O'Malley's office, the Energy Futures Coalition led an effort culminating in a report outlining a Utility 2.0 pilot project that includes changes to the utility regulatory model to align the financial returns of the utility to its performance on key metrics.⁴ This report creates a road map for a paradigm shift in business models of Maryland utilities to incentivize reliability, distributed generation, and energy efficiency while accommodating a new technology architecture in electric service and control, embracing a new customer relationship and competitive entry in customer services, and yet still earning a return on investment for their shareholders. The results of this effort were intended to provide a 'scalable model' for other states.⁵

RIIO

The United Kingdom's regulatory body, Ofgem, developed a new performance-based model called RIIO "to set price controls to ensure consumers pay a fair price" for investment in the energy system. This model is intended to address many of the challenges envisioned as the UK works to achieve a secure and sustainable low carbon energy future while delivering value for investment to customers. Ofgem worked with stakeholders to review and identify potential changes to their existing regulatory regime, RPI-X, and to look at new alternative regulatory models. Ofgem ultimately decided on a largely new regulatory model in 2010 to implement by setting the "Revenue using Incentives to deliver Innovation and Outputs" model or RIIO. This model uses or adapts

4 Energy Future Coalition (March 15, 2013). "Piloting the Future of Maryland's Electric Utilities and their Customers." Submitted to Governor Martin O'Malley. <http://cleanenergytransmission.org/uploads/Utility%202-0%20Pilot%20Project-reduced.pdf>

5 Ibid.

positive elements of the previous regulatory regime, RPI-X, while developing new regulatory measures that encourage “innovation and timely delivery.” Ofgem is implementing the RIIO model and has made minor adjustments to reflect lessons learned.⁶

RMI/PG&E

RMI and PG&E convened a roundtable of experts and leaders that resulted in a report discussing the different perspectives of roundtable participants and a shared set of ‘building blocks’ to develop solutions to the challenges identified. This was one project within a much broader, on-going program at RMI to explore and develop new utility business models.

IDEAS, POLICIES, AND MODELS

MA Grid Modernization Working Group

The Working Group developed new frameworks for cost recovery, including a “Utility of the Future, Today” model that incorporates forward-looking investment plans and performance-based incentives. This model has the following basic steps or components:

- Utility files a multi-year, forward-looking revenue recovery plan, including a business case for the proposed capital investment plan;
- The Commission approves an annual rate schedule for the period covered by the plan, reflecting the appropriate in-service dates and depreciation;
- The annual review process reports on variances between planned and actual expenditures;
- A Capital Reconciliation Mechanism is used to adjust annual base rates to reflect approved variances in capital spending (primarily to address investment timing issues);
- Operational costs are adjusted annually using an approved formula that considers inflation and adjusts for productivity; and
- Base rate adjustments are possible for performance incentives, such as additional (or reduced) basis points on ROE for performance and service quality metrics.

The report also identified targeted policies or mechanisms to work with a new or existing model. For example, the Working Group developed the Distribution Services Pricing policy, which is based on offering additional services to customers willing to pay for them. This could include allowing customers to pay an extra capacity charge to reserve capacity on a second feeder in the event of an outage on their primary feeder, such as is offered through National Grid’s Second Feeder. This service allows customers who highly value reliability to pay for more reliable service, without socializing the costs to other ratepayers. In another example, a utility could charge industrial customers for their demand for kVA in excess of their kW demands.

Utility 2.0

The final report of the Energy Future Coalition (EFC) in Maryland outlines a pilot project or projects that could be implemented to achieve the report’s recommendations. The

⁶ Ofgem (February 6, 2012). “Open letter consultation on the way forward for the next electricity distribution price control review – RIIO-ED1.”

<https://www.ofgem.gov.uk/ofgem-publications/47182/riioed1launchopenletter.pdf>

design would focus on:

- (1) the application of new technologies, strategies, and practices in the day-to-day functioning of electric utility service in a pilot project area; and
- (2) matching changes in utility business practices and reward structures as well as the regulatory scheme under which Maryland's utilities operate.⁷

EFC recommends that the following five attributes should be part of the design of an electric utility of the future that could be tested out as part of a pilot project or projects:

- “(1) Aligning utility compensation with customers’ changing needs and values;
(2) Supporting utility investment in an interoperable, integrated suite of smart-grid technologies; not only on its own system, but on the premises of willing customers;
(3) Allowing utilities to finance and customers to repay system-related and efficiency investments;
(4) Optimizing automated system sectionalizing and reclosing for reliability and resiliency, and simultaneously facilitating micro-grids for areas where customers could safely provide their own energy during an outage on their bills; and
(5) Facilitating electric vehicle deployment and utility benefit from utility-controlled vehicle battery charging.”

Of these five attributes, EFC highlights as the ‘most important innovation’ the changes in compensation to utilities in a way that aligns such rewards with the needs of customers. The EFC also developed metrics for the pilot project’s performance factors.

The report was submitted to the Maryland Public Service Commission, but the PSC has not yet acted on it. However, EFC is working with local government in Montgomery County, Maryland, on the potential implementation of a microgrid pilot project.

RIIO

The RIIO model is designed to place “much more emphasis on incentives to drive the innovation needed to deliver a sustainable energy network that offers value for money to existing and future consumers.”⁸ This model sets the following outputs that “act as a ‘contract’” between companies and customers: customer satisfaction, reliability and availability, safe network services, connection terms, environmental impact, and social obligations the network companies are required by the government to deliver.⁹

The model is based on an eight-year revenue cap derived from a utility’s business and investment plan. The cap provides an incentive to manage costs and business risks, though a portion of the excess earnings are shared with customers through a symmetrical earnings sharing mechanism. If a utility’s earnings are below the authorized level, customers would pick up the difference past the threshold. As part of the business plan or “price control” review, result metrics and outputs would be defined, along with the associated incentive and/or penalty structures. The business plan must be reviewed and supported by stakeholders, with ‘high-quality’ plans eligible for “fast-tracking” by the regulatory body.¹⁰

⁷ Energy Future Coalition (March 15, 2013)

⁸ Ofgem. RIIO-T1 Price Control. <https://www.ofgem.gov.uk/network-regulation-%E2%80%93riio-model/riio-t1-price-control>

⁹ Ofgem (October 4, 2010). “RIIO - a new way to regulate energy networks.” <https://www.ofgem.gov.uk/ofgem-publications/64031/re-wiringbritainfs.pdf>

¹⁰ RIIO-T1: Initial Proposals for SP Transmission Ltd and Scottish Hydro Electric Transmission Ltd <https://www.ofgem.gov.uk/ofgem-publications/53786/sptshetlip.pdf>

RMI/PG&E

This effort addressed potential challenges and solutions to the changing nature of California's energy system, including the role of distributed energy resources in significantly transforming the profile of generating capacity in PG&E's service territory. The project participants agreed on three key 'building blocks' to address the challenges identified by the group:

- "Identify and measure impacts, costs and values of distributed energy resources." This data is needed to develop policies that will accurately reflect costs and benefits.
- "Remedy misalignments between economic incentives to customers and the cost and value to the system provided by distributed resources." New rate structures and incentives can provide clear economic signals to customers that will result in the greatest benefit to the system and value from distributed generation.
- "Adapt utility business models to create and sustain value in a future characterized by higher levels of efficiency and increased deployment of distributed resources." Participants outlined different roles for utilities that included an 'incentive regulation' approach whereby utilities would have an active role in "managing, and potentially, investing in distributed resources as a tool for reducing costs" or, alternatively, a "network utility approach" whereby utilities would incent customers through price signals to "provide the highest value energy supply, load management, or ancillary services to the utility system."

The report discussed the importance of customer engagement and understanding among stakeholders as changes to the regulatory model are developed. The report notes that alignments of the regulatory system must "strike a balance between the interests of traditional customers and customer-generators, while remaining simple enough to be understood by customers."¹¹

LESSONS LEARNED

MA Grid Modernization Working Group

While this proceeding has yet to be resolved, the DPU's Order highlights the risk that the new ideas and options developed by a stakeholder group, even a group that includes staff from regulatory agencies and reaches broad consensus, will not be approved for implementation. In this case, the DPU believed grid modernization initiatives could largely be accomplished through new planning requirements and the existing regulatory model.

One of the potential lessons learned for the e21 Initiative is to take a broad view of the challenges associated with the existing regulatory framework, as opposed to focusing on the need for specific investments. By focusing the scope of the Working Group on the investments needed for grid modernization, the process did not fully address broader industry and business model challenges. As such, the DPU's proposal is narrowly focused on developing a grid modernization plan and targeted cost recovery framework for plan investments.

11 Rocky Mountain Institute (2012). "Net Energy Metering, Zero Net Energy and the Distributed Energy Resources Future." http://www.rmi.org/rmi_pge_adapting_utility_business_models

The MA process also highlights the need to engage regulatory staff and decision-makers along the way, as allowed.

Utility 2.0

As noted, above, the pilot programs and recommendations set forth in the Maryland Utility 2.0 report, which was commissioned by the governor's office, for the most part have not yet been acted upon. Many of the recommendations would benefit from the support and attention of the Public Service Commission, but like many PSCs, it is overwhelmed in rate cases. Thus, although the report has been brought before it through a petition filed in the early part of 2013, the PSC has not opened a docket specifically for consideration of the report. Most likely, the PSC will evaluate specific recommendations and projects outlined in the report in conjunction with an on-going case investigating storm preparedness. Thus, those projects that require PSC action may not be considered until late in 2014 at the earliest, and even then, only as relevant to an on-going case. Thus, one potential lesson to be learned is to determine at the outset of the project the proposed methods for follow-through and engage the entities needed for the follow-through at the outset. As the recommendations are developed, the parties to be engaged and the follow-up plan can be revised accordingly.

RIIO

The RIIO model is a helpful example to review in considering a performance-based approach, which is one of the common approaches suggested by other efforts in the US. The RIIO model highlights how an output or performance-based approach can provide a structure for achieving desired long-term outcomes such as reliability, delivery of low carbon energy, and customer satisfaction. Ofgem reviewed their existing framework (that had existed for 20 years) with a broad range of stakeholders to determine whether or not the existing framework would be effective for the next 20 years in addressing anticipated challenges, including achieving decarbonization targets, investing in aging infrastructure, and increasing consumer engagement. Their process also highlights the importance of engaging stakeholders, incorporating positive aspects of an existing framework where possible, and creating a model that clearly achieves the stated objectives and fosters a predictable, transparent regulatory environment for all parties (e.g., through their 8-year price control period).

RMI/PG&E

The RMI project with PG&E explored key questions, perspectives, and options for addressing future challenges in California's electricity system, namely a significant increase in distributed energy resources. One of the key lessons from this project is that determining the future role of utilities is fundamental to developing a utility business model for the future. The group discussed a range of approaches, from expanded to more limited involvement of utilities, guided by a key question posed by roundtable participants: "What are the functions that utilities will perform in the future and how should we create mechanisms to appropriately compensate utilities for performing those functions?"¹²

CONCLUSION

A few key themes are emerging in the discussion of alternative regulatory models. First, there seems to be growing consensus that utility compensation needs to be aligned with broader policy goals and customer interests and values. To accomplish this, some

¹² Rocky Mountain Institute (2012).

argue the regulatory model should focus on a utility's performance relative to these goals and the value delivered, as opposed to historical costs. This is consistent with the theme of the utility as a service provider, including reliability provider, resource integrator, system defender, efficiency advisor, and other roles utilities are well-suited to fill. A new or adapted regulatory model will need to enable utilities to deliver on goals and successfully provide the desired services to customers while balancing risk and providing for predictable cost recovery.

Given the shifting technology landscape, many cite the importance of the regulatory model enabling greater participation of consumers in the energy system. In part, this may include exploring the role of utilities in facilitation of new technology adoption, increasing efficiencies, and otherwise supporting customers in engaging in their energy usage, management, and generation.

Many also believe incentives can play an important role in directing utilities toward high value activities and encouraging progress on public policy objectives and regulatory goals.

Finally, a common thread in the discussions of other efforts is the need to develop a shared understanding among stakeholders to successfully develop any new or adapted regulatory model and to clearly communicate the costs and benefits of such changes to all stakeholders.

ADDITIONAL READING MATERIALS & RESOURCES

Edison Electric Institute

In January 2013, the Edison Electric Institute (EEI) released a report called "Disruptive Challenges" on the potential for distributed generation and other technologies to disrupt the traditional utility business model.¹³ This report helped frame the challenges faced by utilities and the need for new regulatory approaches. The report cautions that as the risks associated with distributed generation and other competitive threats become more evident, investors will pull back from the utility sector, which will increase the cost of capital and limit capital availability.

America's Power Plan

In September 2013, the energy and environmental policy firm Energy Innovations released a series of reports in partnership with the Energy Foundation called "America's Power Plan."¹⁴ APP is intended to be a toolkit of information and policies needed to transform the electricity system in a way that minimizes cost and maximizes reliability and environmental performance. In particular, it envisions a future where renewable energy provides the majority of the country's electricity needs. The recommendations include a shift to performance-based or incentive-based ratemaking to allow a utility to improve earnings through verified results and reduce or eliminate dependence on growing rate base and sales to increase earnings.

¹³ Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business. <http://www.eei.org/issuesandpolicy/finance/Pages/default.aspx>

¹⁴ Energy Innovations (September 2013). "Americas Power Plan." In partnership with the Energy Foundation. <http://americaspowerplan.com/>

The process they recommend is to determine desired societal outcomes, determine the legal and market structures under which utilities will operate, and develop and implement correct market and regulatory incentives. America's Power Plan recommends asking the following questions when designing regulation:

- What outcomes does society want from utilities?
- What role should utilities fill in the future?
- What incentives should law and regulation provide?
- How must regulation be modified to provide these incentives?

General Electric Digital, "Results-Based Ratemaking" (October 2013)

Building off the work in Massachusetts is a report called "Results-Based Ratemaking" published by General Electric (GE) Digital in October 2013.¹⁵ Like the "Disruptive Challenges" report, this report is getting attention nationwide and is drawing interest in Minnesota and Colorado specifically.

California Public Utility Commission, "The Business Model for the Electric Utility of the Future" (October 2013)

On the west coast, the California PUC hosted an October workshop on "The Business Model for the Electric Utility of the Future."¹⁶ The workshop included presentations from consultants and a panel discussion of utility CEOs. It was an initial discussion that focused on the changes facing the industry, how utilities are adapting, and what may be needed in the future. As part of the panel, the CEOs responded to questions about performance-based rates. Next steps have not yet been determined.

Other:

Arizona (Docket No. E-0000J-13-0375)

The Arizona Commission has opened an inquiry to apprise the Commission on innovations and technological developments that could impact the current utility model. The inquiry is prompted by a concern that an increasing number of businesses will use solar, storage and other technologies to minimize use of the grid or leave it altogether, which would leave residential customers with system costs. A procedural schedule has not yet been established.

¹⁵ GE Digital Energy (October 2013) "Results-Based Regulation: A Modern Approach to Modernize the Grid."

<http://www.gedigitalenergy.com/regulation>

¹⁶ California Public Service Commission (October 8, 2013). "En Banc: The Business Model for the Electric Utility of the Future."

http://www.cpuc.ca.gov/PUC/Oct_8_2013_En_Banc_The_Business_Model_for_the_Electric_UTILITY_of_the_Future.htm