

UK'S RIIO – A PERFORMANCE-BASED FRAMEWORK FOR DRIVING INNOVATION AND DELIVERING VALUE

A successful transition to a 21st Century Electricity System (21CES) requires careful consideration of a range of issues that will ultimately redefine the regulatory framework and utility business model. This case study is the first in a series by Advanced Energy Economy Institute, America's Power Plan, and Rocky Mountain Institute that highlights 21CES business model reforms being implemented in the United States and elsewhere. This series is published concurrently with a guiding document on Navigating Utility Business Model Reform to provide a menu of options and practical guidance for pursuing reform at the state level. This report is available at: <http://www.rmi.org/insight/navigating-utility-business-model-reform>

What is RIIO, and What Could the RIIO Framework Offer Regulators in the U.S.?

RIIO (Revenue = Incentives + Innovation + Outputs) is a performance-based regulatory model created by the UK's Office of Gas and Electricity Markets (Ofgem). RIIO seeks to reward utilities for innovation and for delivering outputs that meet the changing expectations of consumers and society. In the United States, the traditional utility business model based on cost-of-service regulation (COSR) has served us well for many years, but is increasingly out of step with a new set of market conditions – aging infrastructure, advances in technology, and flat-to-declining load growth driven by rising deployment of energy efficiency, demand response, and other distributed energy resources (DERs).¹ COSR favors utility capital investment in long-lived assets and discourages utilities from taking advantage of the general shift in the economy to service-based solutions provided by third parties. COSR is primarily focused on rewarding inputs (capital investment) rather than outputs (performance against desired policy objectives).

The UK's RIIO is widely regarded as the most comprehensive performance-based regulatory system developed to reflect changing market conditions, allow utilities to take advantage of the growing service economy, and reward utilities for achieving desired outcomes. The RIIO model can be broken down into four main features to encourage utilities to innovate and achieve favorable outputs: **1)** a multi-year rate plan; **2)** the total expenditure (totex) approach; **3)** performance incentives; and **4)** an innovation fund. (Details in the table below).

Key Policies in the RIIO Model

Multi-Year Rate Plan	Totex	Performance Incentives	Innovation Fund
Ofgem sets baseline revenues that utilities can collect for an eight-year rate period . The plans include revenue adjustment mechanisms dependent on utilities' performance against pre-set targets as well as uncertainty adjustment mechanisms for unpredictable cost changes or events. The multi-year rate plan is intended to incentivize longer-term investments that are needed to transition to a modern grid. It gives utilities incentives to spend efficiently because if they deliver a project under budget they can keep a portion of the cost-savings as profit, with the remaining portion retained by customers. Cost overruns are also shared between the utility and customers.	Totex combines a portion of utility capital expenditures (capex) and operating expenditures (opex) into one regulatory asset that allows a rate of return on both, based on a pre-set percentage split. This diminishes the incentive for utilities to prefer to invest in capex (traditionally earning a rate of return) over opex (traditionally passed through without a return). Coupled with a revenue cap, the totex approach gives utilities an incentive to seek the most cost-effective solution , and encourages them to contract for services with third-parties that can drive down project costs, resulting in a win-win-win scenario for the utility, third parties, and customers.	In addition to the efficiency incentive included in the multi-year rate plan and revenue cap, Ofgem set up specific targets utilities must meet, with some tied to financial incentives worth up to +/- 250 basis points. The targets are tied to six performance categories: reliability and availability, environment, connections, customer service, social obligations, and safety. The targets also include utility benchmarking and scorecards so utilities can see how they compare to others and to give them "reputational" incentives to perform.	Ofgem set up a fund to sponsor innovative pilots for utilities to test new technologies and operating and commercial arrangements, as well as an innovation rollout mechanism ² to reduce the risk associated with new projects that provide environmental benefits. The Network Innovation Allowance (£90 million per year for electricity and £20 million per year for gas networks) and the Network Innovation Competition (£61 million per year) fund projects in the gas and electricity rate plans. The projects help to share information among utilities on lessons learned about modernizing the grid.

What was the Process to Develop RIIO?

RIIO is the next step in the evolution of how the energy companies in the UK are regulated. After the liberalization of the energy market in the late 1980s, Ofgem adopted a revenue-cap regulatory framework, called RPI-X. In 2008, Ofgem began a review of the RPI-X framework, called the RPI-X@20 project, to evaluate changes and to accommodate new challenges facing the energy network. This was a multi-year project, involving a wide range of stakeholders, which concluded with adoption of a new framework, RIIO, in October 2010. This set in motion a 30-month process to develop the utility rate plans, with stakeholders engaged throughout. The process was broken into four stages: 1) determining the outputs and main priorities, 2) developing business plans, 3) revising and finalizing business plans, and 4) implementing and applying the rate plans. RIIO model began implementation for electricity transmission in April 2013 and electricity distribution in April 2015.

Results So Far

RIIO is too new for any of the utilities to have completed a full eight-year rate plan cycle or to allow full analysis of RIIO's effectiveness. As of 2018, the electric transmission operators (TOs) are about 60% through their existing set of rate plans (April 2013 to March 2021), while the electricity distribution utilities (EDUs) are nearly 40% through (rate plan is April 2015 to March 2023). But results to date have been mixed. The following is a summary of key takeaways, based on annual progress reports filed by the TOs and EDUs, and independent reviews published on the RIIO approach:

Average customer costs have declined for distribution but increased for transmission. In 2015-2017 the average customer in Great Britain paid £87 per year for electric distribution costs and is estimated to pay £83 per year in 2018-19. If this estimate comes to fruition it would represent a 3.5% reduction in customer bill impacts over the past couple of years. For transmission, the average customer in Great Britain paid £38 in 2016-17 and this is expected to remain the same in 2018-19. However this is a large increase over the average customer cost of £23 in 2013-2014. More analysis is needed to determine if these changes are the result of factors outside the utilities' control and/or the result of operational efficiencies. In addition, these numbers are an average of all TOs and EDUs. When considered individually, results vary widely.

Early results show that utilities have mostly achieved their performance targets. After the first two years, all EDUs are performing strongly against their performance targets, most notably in customer satisfaction and improving the time to connect distributed generation to the grid. All TOs have achieved their targets for five of their six output categories. The TOs have fallen short only in connections, although a reduction in connection requests has reportedly impacted this metric (for a detailed review on performance against metrics, see p. 3). However, critics have said that incentives are not driving the most desirable outcomes and should be reevaluated to align with the intended end vision of RIIO.

Most utilities are outperforming their total expenditure allowances. After the first two years of the EDU rate plans, 11 of the 14 utilities underspent their totex allowances and

collectively spent 7% less than their forecasted allowance. EDUs are now forecast to underspend their £26 billion totex allowance by 5% over the full eight-year rate plan. Over the first four years of the TO rate plans, the three operators have underspent their totex allowance forecast by 22%. TOs are now forecast to underspend their £17.5 billion allowance by 10% over the full eight-year rate plan. However, critics have said that this large underspend is because of flaws in the benchmarking and revenue setting process that incent utilities to game their base revenue allowance (more on this in Areas for Improvement, p. 4).

Earnings are forecast to be above cost of equity for all electricity transmission and distribution operators. All EDUs are outperforming their 6%-6.4% allowed cost of equity, with the weighted average return on equity (ROE) across the sector at 9.45%. All TOs are outperforming their 7% allowed cost of equity, with the weighted average ROE across the sector at 9.49%. The EDUs and TOs have both been able to earn above their allowed cost of equity by outperforming their totex allowances and earning performance incentives for meeting established targets. It is important to note that when RIIO began, Ofgem expected the best performing companies to earn low double-digit ROE returns, so the results do not diverge far from expectations. In addition, these results are comparable to the average ROE for utilities in the United States which, according to AEE's PowerSuite,³ have an average allowed ROE of about 10%.

Innovation fund has produced benefits, but hasn't focused on new technologies or gone beyond pilots. An evaluation of the £500 million Low Carbon Network Fund in March 2017, which funded trial projects for EDUs from 2011 to 2013, estimated net benefits of £800 million to £1.2 billion. Although the final results will not be known for some time, these initial results are promising. In the first two years of the EDUs rate plan, the utilities spent £61.2 million to test

over 260 innovative projects. However, there is still room for improvement. The majority of projects have focused on improving asset health and operating efficiencies rather than on evaluating the role of new technologies. In addition, there needs to be an increased focus on moving beyond pilots by increasing funding for larger programs through the innovation roll out mechanism.

Incentives and Performance to Date

Over the first two years of the EDUs' rate plans (2015-17), the utilities collectively earned £438.1 million in incentives, with £320.1 million for interruptions incentives, £14.7 million in time-to-connect incentives, £12.2 million in connections customer engagement incentives, £83 million in broad customer service incentives, and £8.1 million in environmental incentives. Over the first four years of the TOs' rate plans, the operators collectively earned £117.4 million in incentives. We focus our analysis on the EDUs' performance against established targets (as opposed to the TO's performance) because total financial incentives are skewed heavily towards EDUs. The following is a detailed look at the EDUs performance against targets thus far:

Categories	Targets	Performance
Reliability & Availability	Minimizing the number and duration of interruptions	Since the beginning of the EDUs' rate plans, customer interruptions have decreased by 11% and customer minutes lost by 11%.
Environment	Reducing carbon footprint and other emissions targets from their operations	In aggregate, EDUs have reduced their business carbon footprint (BCF) by 3% in the first two years compared to the last rate period, and showed progress toward their other emissions targets as well. ⁴ There were inconsistencies in reporting, however, with BCF reductions ranging from 28% to -59% among the 14 distribution utilities, leading Ofgem to review reporting methodologies for future years.
Connections	Reducing time for customers to connect to the grid	Collectively, the time taken for utilities to quote connection requests has been cut in half since the targets were set in 2013. In addition, there has been a slight improvement in the time taken from customers accepting a quote to successfully connecting to the system, with a reduction of 2 to 3 days for very small requests (i.e., the load of one small household) and by 3 to 4 days for small requests (i.e., one to four households).
Customer Service	Maintaining customer satisfaction and improving stakeholder engagement	Customer satisfaction scores have varied widely among the utilities, although all EDUs have met or surpassed their customer service and complaints performance targets in the second year of their rate plans. In addition, all but one EDU improved on their customer service satisfaction survey from the first year of their rate plan.
Social Obligations	Improving coordination and partnerships with other suppliers and agencies to help vulnerable customers	All utilities met or exceeded the targets set for social obligations, but for a majority of EDUs scores have decreased from the first year of their rate plan. Tailoring their activities to targeted areas and demonstrating the value that certain programs can provide to vulnerable customers are ways that utilities could improve their performance on social obligations.
Safety	Complying with safety standards	All utilities have met or exceeded all safety obligations that are enforced and regulated by the Health and Safety Executive (HSE).

Areas for Improvement

In July 2017, Ofgem began its midterm review of the first four years of RIIO. Ofgem is expected to complete their initial review with recommendations on changes for the second set of rate plans in the summer of 2018. Initial results from the midterm review, as well as our analysis of EDU and TO annual reports, have identified several potential areas for improvement:

- ⦿ **Simplify and decrease the regulatory burden.** Information production and reporting are necessary requirements of regulation. RIIO is a relatively complex regulatory framework, but it should be streamlined, standardized, and simplified as much as possible.
- ⦿ **Move away from benchmarking and toward a greater emphasis on performance-based regulation.** The current framework heavily incentivizes certain outputs, such as operational efficiency, over others, such as the environment. Output incentives should be reevaluated to drive outcomes such as stimulating innovation, increasing advanced energy deployment on the system, expanding the use of non-wires alternatives, or reducing peak demand.
- ⦿ **Evaluate setting more ambitious performance targets.** So far, utilities are outperforming their targets and earning significantly more rewards than penalties. As such, Ofgem should review whether their targets and/or forecasts are insufficiently ambitious.
- ⦿ **Evaluate length of rate plans.** Ofgem implemented eight-year plans to increase revenue certainty and encourage innovative longer-term investments. However, the length of the plans has limited regulatory flexibility and should be reviewed to evaluate whether the period is too long for the rapidly changing utility industry.
- ⦿ **Increase engagement in the target setting process.** RIIO is built on the foundation of achieving outputs. Customers should be given more of a voice in establishing these outputs and forming business plans.
- ⦿ **Increase benefits for and revenue-sharing with customers.** Customer value is one of the key tenets of RIIO and so customers should reap the benefits of achieving RIIO's targets by tying outputs more closely to consumer value.
- ⦿ **Improve the current slow-track and fast-track regulation approach under RIIO.**⁵ Only one EDU was fast-tracked in the first rate period, allowing them to earn the highest return of all of the EDUs. However, they have performed the worst against their business plan so far – overspending by 5%. Alternatively, the slow-track process with benchmarking is more burdensome and incentivizes utilities to underspend to earn a higher sharing incentive and therefore increase their profits. As such, the revenue setting process should be reviewed to ensure it is encouraging desired outcomes.

Applying the RIIO Model in the United States

The problems that RIIO is trying to solve – changing market conditions, capital bias, and a focus on inputs instead of performance – are equally relevant for U.S. regulators as for Ofgem. The solutions that RIIO proposes – multi-year rate plans, totex, performance incentives, and an innovation fund – could be applicable to U.S. utilities, with one caveat. Adoption of the totex approach would face obstacles in the United States because of the different accounting standards between the United States and the UK.⁶ However, as outlined in AEE Institute's whitepaper: *Utility Earnings in a Service-Oriented World*, there are several other regulatory mechanisms that can be considered to remove the capital bias and help balance capital and service expenditures.

Sources

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End Notes

¹ We define DER broadly to include energy efficiency, demand response, distributed generation of all types, energy storage, microgrids, and electric vehicles and the associated charging infrastructure. These resources can be used individually or in combination to defer or avoid traditional utility investments.

² The innovation Roll out Mechanism (IRM) is intended to roll out successful innovations into larger projects. The first window to implement the IRM began in May 2017 and has not yet been evaluated.

³ PowerSuite is AEE's online policy platform. For more information visit powersuite.aee.net

⁴ Sulphur hexafluoride (SF₆) emissions have been reduced by 19% and oil leakage has been reduced by 18% since the beginning of the rate period.

⁵ In the beginning of each price control, EDUs file business plans. If well-designed, they are fast-tracked and the EDU receives a 2.5% financial incentive and a higher sharing incentive rate. However, if the first plans are not approved, the EDUs must resubmit plans that are subject to greater scrutiny and then measured against a benchmark figure to determine their sharing incentive factor.

⁶ Regulated utilities in the US need to comply with two different accounting standards, the Uniform System of Accounts (USofA) established by its regulators (state utility commissions and the Federal Energy Regulatory Commission [FERC]) and the US Generally Accepted Accounting Principles (GAAP) adopted by the Securities and Exchange Commission (SEC). While there is significant flexibility for regulators to alter utility rates and incentives to meet USofA they still have to comply with GAAP standards and guidelines for reporting purposes. As the totex approach has not yet been implemented in the United States, there is uncertainty as to how it could be applied (as stated by the New York Public Service Commission in its Reforming the Energy Vision proceeding) and the implications of such an approach on utility financial statements could be significant.