

*Roundtable Report*

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# Reforming Electricity Regulation in New York State: Lessons from the United Kingdom

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## *Introduction*

In April of 2014, the New York State Public Service Commission (Commission) launched a proceeding known as “Reforming the Energy Vision (REV)” to revamp the rules governing the state’s electric distribution utilities. State officials seek to foster an electricity system that better advances a range of public policy objectives, including system efficiency, customer engagement, affordability and lower carbon intensity. The New York proceeding has attracted nearly 300 parties and has become a focal point for nationwide efforts aimed at reforming electric utility regulatory models.

In the order instituting the REV proceeding, the Commission noted that the United Kingdom’s novel approach to network regulation known as “RIIO” (**R**evenue = **I**ncentives + **I**nnovation + **O**utputs) “introduces some promising innovations that could potentially be implemented [in New York State] to achieve our policy objectives.”<sup>1</sup> Unfortunately, however, there is little up-to-date and comprehensive information in the US about RIIO’s design and early implementation. To remedy this deficiency, the Guarini Center hosted a daylong roundtable discussion on RIIO on November 18, 2014.

The forum brought together experts from the UK and US to analyze the RIIO model and compare the relevant political, economic, and regulatory contexts in the UK and New York State in order to evaluate adapting elements of RIIO in New York. Participants at the meeting included British representatives from government, industry, and academia as well as American economists, financiers, lawyers, environmental advocates, electric industry representatives and New York State Department of Public Service staff. Notably, many of the British attendees were directly involved in designing and implementing RIIO.

The discussion, conducted under Chatham House rule, is summarized in this report. Part I compares the policy drivers behind RIIO and REV as well as the regulatory backdrop against which reforms took place or are taking place. Part II analyzes various features of RIIO including its cost accounting practices, environmental incentives, and innovation rewards. In Part III, the report presents some of the political factors that participants believed helped build support for RIIO in the UK and then, in Part IV, it reviews the early evidence of utilities’ performance under RIIO. Part V considers how the desire to quickly bring new renewable generation onto the grid may put pressure on the current rules regarding unbundling in the electric sector in the UK and New York State. Finally, in Part VI, the report highlights the importance of looking beyond the determination of revenue allowances, which is a focal point of RIIO, to consider the role that pricing practices can play in advancing the Commission’s policy objectives. Notably, the authors of this report have provided background information to help contextualize remarks made during the discussion where deemed appropriate.

Some of the major points of consensus that emerged throughout the discussion are presented in **Figure 1** below. Notably, roundtable participants were divided over the merits of RIIO’s elongated price control intervals and use of “totex” accounting, which the Commission indicated in its April 2014 REV staff report were particular elements of interest.

This roundtable discussion was part of a Guarini Center project to support New York State’s efforts to facilitate a transition to a cost-effective, low-carbon energy system.

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<sup>1</sup> DPS staff report and proposal, Case 14-M-0101: Proceeding on motion of the Commission in regard to Reforming the Energy Vision (N.Y. Pub. Serv. Comm’n Apr. 24, 2014) at 55.

Figure 1. Key points of consensus

- RIIO marked an “evolution, not revolution” away from its predecessor regime, RPI-X. Adopting a program similar to RIIO in New York State would require a more ambitious set of changes to New York’s current regulatory conventions.
- British regulators’ decision to conduct a thorough multiyear regulatory review prior to finalizing RIIO as well as their incremental implementation of the new regime were critical to building stakeholder support for reforms.
- RIIO’s rigorous *ex ante* approach to setting revenue allowances based on projections of efficient future costs is an essential element of its power to economize utility costs; most participants believed New York would need to adopt a more rigorous *ex ante* approach than is currently in place to have similar reforms succeed in New York.
- RIIO’s emphasis on customer engagement during the development of output targets and in assessing utility performance towards those targets has been “game-changing” and roundly applauded by stakeholders in the UK.
- RIIO’s discretionary funds to reward innovation have brought about significant changes in utilities’ business culture and priorities.

## Discussion Synthesis

### PART I: THE REGULATORY BACKGROUNDS AND POLICY DRIVERS OF REV AND RIIO

Participants at the roundtable noted that RIIO is designed to achieve policy objectives similar to REV, which makes it a potentially instructive model from which to borrow. Yet there was consensus among participants that a RIIO-like regime would entail more significant regulatory reform in New York than it did in the United Kingdom, where there was already an established legacy of incentive regulation in place.

#### A. REGULATORY BACKGROUND AND POLICY DRIVERS OF RIIO

Prior to the advent of RIIO, British authorities applied a framework referred to as “RPI-X” to regulate electric utilities.<sup>2</sup> Under the RPI-X approach, regulators set a cap on the rate utilities could charge for electricity or the total revenue they could collect, and then specified a productivity factor (“X”) by which this cap had to decline throughout the price control, after adjusting for inflation (retail price index, or “RPI”). Critically, caps under RPI-X were set by reference to regulators’ projections of the efficient cost of delivery in the future, rather than past expenses incurred by the utilities. As such, RPI-X is characterized as an *ex ante* approach to regulation.

The primary aim of the RPI-X regime was to lower the cost of electricity delivery by inducing utilities to adopt cost-reducing measures, and by all accounts the regime succeeded in achieving this goal. One British expert at the roundtable meeting stated that real distribution and transmission revenue fell approximately 50 percent during the fifteen-year period after RPI-X was first applied to electric utilities in 1990. (Presumably, network operators economized costs by a similar amount during this time period in order to remain solvent.) However, the emphasis on cutting operating costs had some negative consequences; in particular, it caused network companies to dramatically reduce spending on research and development and, as a result, innovation – which had already been low – dwindled further.

Over time, officials at the Office of Gas and Electricity Markets (Ofgem), the body that governs the energy industry in the UK, came to see an urgent need to remodel the electricity grid to bring online additional low-carbon energy supplies, replace aging infrastructure, and ensure that networks remained resilient. These pressures came to a head with the enactment of the UK Climate Change Act of 2008, which established a legally binding commitment for the UK to reduce emissions by 80 percent below a 1990 baseline by 2050. Regulators understood that meeting this objective would require a dramatic increase in investment in order to build the networks needed to accommodate additional renewable resources. It also would require a large measure of innovation in order to smartly manage anticipated load growth, much of which would be served by intermittent and decentralized sources. Ofgem was skeptical that RPI-X would deliver in either respect.<sup>3</sup> As one participant summarized the situation, “The government, with a view to sustainability, was saying Britain is going for water [hydro], wind and nuclear – which is generally located in the middle of nowhere – and we also want distributed generation. So we knew there was going to be a tremendous pressure on rewiring the country and did not feel RPI-X was the natural model to give us what we wanted.”

British experts at the roundtable identified several specific shortcomings with the RPI-X regime:

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<sup>2</sup> See Benjamin H. Mandel, A Primer on Utility Regulation in the United Kingdom: Origins, Aims and Mechanics of the RIIO Model, at 3 (2014) for more detail on the RPI-X regime, available at <http://guaranicenter.org/a-primer-on-utility-regulation-in-the-united-kingdom/>.

<sup>3</sup> Michael G. Pollitt, *The future of electricity (and gas) regulation in a low-carbon policy world*, Special Issue - The Future of Electricity: Papers in Honor of David Newbery ENERGY J. (2008).

- The emphasis on cutting operating costs undermined incentives to invest in research and development;
- Towards the end of the regime, rapidly increasing capital costs had transformed the regime from RPI-X to “RPI+X” in practice;
- Administrative demands of the ratemaking process had become unduly burdensome; and
- The practice under RPI-X of permitting utilities to accelerate the depreciation of their physical assets, which was used to improve cash ratios to meet “financeability” targets, spurred inefficient levels of capital expenditure.

Thus, in 2010, following a two-year regulatory review, Ofgem unveiled a new framework known as RIIO. The first set of RIIO price controls for electric transmission operators (“RIIO-T1”) began in 2013 and will continue into 2021<sup>4</sup>; the first RIIO price controls for electric distribution operators (“RIIO-ED1”) will span April 2015 through 2023. The defining elements of RIIO, and roundtable participants’ assessment of the framework, are described in Part II.

## **B. COMPARING THE REGULATORY BACKGROUNDS AND POLICY DRIVERS OF RIIO AND REV**

There are noteworthy similarities between the RPI-X regime and the approach currently in place in New York State. Of particular import, both programs incorporate a limited range of financial performance incentives. Under RPI-X, Ofgem used a series of incentives to encourage utilities to maintain adequate performance across dimensions such as service reliability and electricity losses.<sup>5</sup> Similarly, for the last decade or more, New York State has implemented financial performance incentives for customer service, service reliability, energy efficiency, and safety.<sup>6</sup>

Yet, despite these similarities, roundtable participants noted that the political contexts and incumbent regulatory structures in the two jurisdictions diverge in meaningful ways.

As in the UK, New York State is under pressure to increase the amount of low-carbon energy sources connected to the grid, replace aging infrastructure, and, particularly in the aftermath of Superstorm Sandy, increase the resiliency of its electric system. However, participants highlighted that because there is no binding obligation to reduce greenhouse emissions in New York State analogous to that imposed by the UK Climate Change Act of 2008 the Commission lacks an equivalent mandate to pursue far-reaching environmental objectives.<sup>7</sup>

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<sup>4</sup> The first RIIO price controls for gas transmission and distribution companies went into effect at the same time as those for electric transmission.

<sup>5</sup> See Tooraj Jamasb & Michael Pollitt, *Incentive regulation of electricity distribution networks: Lessons of experience from Britain*, 35 ENERGY POL. (2007) at 6171.

<sup>6</sup> Notably, New York State has had performance targets for service quality and reliability for over 20 years.

<sup>7</sup> New York State does have an aspirational goal of putting the State “on a pathway to achieve an 80 percent reduction in total emissions by 2050,” which is articulated in the recently released Draft 2014 New York State Energy Plan. See NEW YORK STATE ENERGY PLANNING BOARD, DRAFT 2014 NEW YORK STATE ENERGY PLAN, Vol.1, 29 (2014). In addition, if implemented, the federal Environmental Protection Agency’s “Clean Power Plan” would impose a binding obligation on New York State to reduce the carbon intensity of the electric sector. See generally Carbon Pollution Emission Guidelines for Existing Statutory Sources: Electric Utility Generating Units 79 Fed. Reg. 34,830 (June 18, 2014) (to be codified at 40 C.F.R. pt. 60).

With respect to the incumbent regulatory regimes, while RIIO extended the duration of rate plans to eight years, rate plans were already five years under RPI-X, which is significantly longer than the three years that plans typically last in New York State.<sup>8</sup>

More fundamentally, unlike the current regime in New York, RPI-X and RIIO set revenue allowances through a rigorous *ex ante* approach that uses benchmarking to project a given utility's *efficient* future costs by comparing it against the lowest-cost industry practices<sup>9</sup>; revenue caps are then set at a level that corresponds to this projection.<sup>10</sup> By allowing recovery of only efficient costs, the British regimes incentivize companies to cut costs beyond what they would if they continued with "business as usual." Participants widely agreed that this rigorous *ex ante* approach is key to encouraging cost efficiency.

Participants observed that the notion of *ex ante* regulation presents a "conceptual hurdle" for many American regulators, who typically shy away from forecasting future costs. One participant suggested that American regulators are particularly reluctant to adopt the rigorous approach in place in the UK because of the difficulty of conducting the required benchmarking analyses (see Part II.A below for a description of Ofgem's approach to benchmarking in RIIO price controls).<sup>11</sup>

New York is relatively progressive among American jurisdictions in that it utilizes a "future test year" convention, in which regulators base revenue allowances on forecasts of sales, taxes, and expenses in a future year.<sup>12</sup> However, having suspended benchmarking exercises,<sup>13</sup> New York presently does not determine *efficient* future costs by surveying and calculating lowest-cost practices throughout the industry. Therefore, while New York's approach to setting revenue allowances is *ex ante*, it does not pressure companies to contain costs to the same extent as RIIO does. Participants generally, though not uniformly, agreed that it would be very difficult for New York to craft a regime that effectively incentivizes companies to minimize costs without adopting a more rigorous *ex ante* approach to ratemaking. Simply elongating the price control period without further modification, as some feared New York is contemplating, will not replicate the effects of a rigorous *ex ante* regime, one expert advised.

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<sup>8</sup> It has been argued that the shorter duration of rate plans diminishes utilities' incentive to pursue efficiency improvements. See, e.g., Paul L. Joskow, *Incentive Regulation in Theory and Practice: Electricity Distribution and Transmission Networks*, in ECONOMIC REGULATION AND ITS REFORM: WHAT HAVE WE LEARNED? (Nancy L. Rose ed. 2014) at 308. Some American participants noted that New York utilities have asserted a right to file rate cases on an annual basis, which may hinder the Commission's ability to impose substantially lengthened rate plans.

<sup>9</sup> Importantly, British regulators also use benchmarking to calibrate targets for performance incentives (described in Part II.B).

<sup>10</sup> More specifically, the revenue cap is set at a level that compensates companies for the projected level of expenditure and provides a reasonable rate of return on only needed investments.

<sup>11</sup> In conversations subsequent to the meeting, a participant argued that New York uses company- and issue-specific efficiency elements in rate setting that are functionally similar to benchmarking. This participant also stated that the Commission asks for justifications before increasing cost approvals and attempts to rein in inefficient costs by referencing best practices, challenging assumptions, and performing management audits.

<sup>12</sup> These features of New York's existing regulatory approach were explained in a subsequent conversation with a meeting participant.

<sup>13</sup> In conversations subsequent to the meeting, a participant noted that New York's abandonment of benchmarking analysis was primarily due to demographic and historical heterogeneity across utilities, rather than the difficulties related to modelling. See National Association of Regulatory Utility Commissioners (NARUC), *Performance-based regulation in a restructured electric industry* (1997) at 22 for a discussion of New York's experiences with cross-utility comparison efforts in its early-1990s price cap regulation schemes.

Participants cautioned that there is a need to account for the discrepancies between RPI-X and the current regulatory regime in New York State in establishing appropriately scaled goals for reform.

## **PART II: APPRAISING RIIO**

A British speaker at the roundtable noted that, as under RPI-X, utility revenues under RIIO are still primarily driven by the base revenue allowance (as detailed further in the “Performance Incentives” section below), which is set largely—though not entirely—the same way as it was before. However, other features of RIIO, such as its emphasis on customer engagement, accounting methodologies, and the incorporation of a diverse suite of performance incentives, are quite novel for energy regulation. These various features are analyzed below.

### **A. BASE REVENUE DETERMINATION**

**Benchmarking**<sup>14</sup>: To determine the base revenue allowance, Ofgem utilizes statistical benchmarking methods, including high-level regression analysis across operators, to estimate how much expenditure should be compensated and subsequently computes an appropriate return on equity to incorporate. Operators, in turn, are expected to conduct a more detailed benchmarking analysis to justify the levels of expenditure they propose in business plans. American participants expressed trepidation about the idea of incorporating benchmarking analyses into the regulatory review process, which they feared would impose extensive burdens on state regulators. In response, British participants noted that Ofgem’s approach also relies on standardized expenditure information, as reported by regulated entities, to complement regression analyses in its benchmarking exercises.<sup>15</sup>

**Total Expenditure (totex)**<sup>16</sup>: One of RIIO’s notable innovations is that it bases total allowable revenue on an accounting figure that combines capital expenditure (capex) and operating expenditure (opex) into a single “totex” number.<sup>17</sup> In past price controls, Ofgem determined efficient levels of both operating and capital expenditure as separate inputs into the base revenue calculation. Because only capex counted toward the regulatory asset value (RAV), which generates a return on equity from future ratepayers, the old arrangement created an incentive for companies to solve problems with capital expenditures, even when operating expenditure solutions may have been able to deliver the desired level of output at lower life-cycle cost.

Totex accounting aims to ameliorate this bias towards capex by allowing firms to capitalize a fixed share of their total expenditure (both capital and operating) as “slow money” and compensating the residual expenditure immediately as “fast money.” The slow money portion is added to the RAV and accordingly generates financial returns, while the fast money portion is recovered almost in real-time. The inclusion of a portion of operating expenses in the RAV represents a significant departure from previous practice by

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<sup>14</sup> See, e.g., Tooraj Jamasb & Michael Pollitt, *Benchmarking and regulation: International electricity experience*, 9 *Util. Pol.* (2001) for a technical overview of various benchmarking methods used internationally by utility regulators.

<sup>15</sup> In subsequent conversation, one event participant noted that Ofgem’s benchmarking methodology is far from perfect due to the limited comparability of firm-reported data. He argued that this creates analytical results that are less than robust, but still likely to lead to more efficient outcomes than an *ex post* approach (or an *ex ante* approach that does not project efficient future costs).

<sup>16</sup> For a comprehensive description of how totex accounting informs RIIO financial models, see Office of Gas and Electricity Markets (U.K.) (Ofgem), *ET1 price control financial handbook* (2014) at 61.

<sup>17</sup> Ofgem introduced totex accounting in its last RPI-X price control for distribution companies (DPCR5) and retained it in RIIO price controls for both transmission and distribution.

enabling companies to generate earnings from operating expenditure, rather than just capital investment. Moreover, by allowing companies to immediately recover a portion of capital expenditure as fast money – also a departure from past practice – the totex approach aims to reduce the uncertainty surrounding cost recovery that may have previously discouraged operators from embarking on needed capital projects (this, in turn, should also improve companies’ cash positions and accordingly bolster their credit ratings.)

British roundtable participants disagreed over the extent to which totex accounting has altered companies’ earlier bias in favor of capex. One participant remarked that totex accounting has materially reshaped network companies’ preferences, by making them indifferent as to whether to reduce capex or opex. Another participant disagreed; he noted that RIIO still creates incentives for firms to inflate capex because capex is depreciated over the entire financial life of the asset in the RAV and therefore generates returns over a longer horizon than opex contributions to totex, which are only reflected in the RAV during the current price control.

## **B. PERFORMANCE INCENTIVES**

Arguably the most distinctive feature of RIIO is the extent to which it links a utility’s revenue to its ability to achieve a suite of performance objectives. Under RIIO, each company is required to submit business plans that specify targets the company will pursue in the subsequent price control period across six output categories—customer service, reliability and availability, safety, connection terms, environmental impact, and social obligations. Ofgem then uses a range of approaches, including financial and reputational incentives as well as upfront spending allowances,<sup>18</sup> to encourage the achievement of these targets during the price control period.

Roundtable participants were widely supportive of the decision to broaden the range of performance incentives beyond those in place under RPI-X<sup>19</sup> and to increase their centrality to the ratemaking process. Yet they disagreed about the appropriateness of the magnitude of the performance incentives Ofgem established: in RIIO-T1, base revenues have been calibrated to deliver 5-9% return on regulatory equity (RoRE),<sup>20</sup> and financial performance incentive measures (both positive and negative) expand this range to 3-11% RoRE (see **Appendix A** for selected performance incentives that are in effect for RIIO-T1).<sup>21</sup> In RIIO-ED1, base revenues have been calibrated to deliver 5-8% RoRE,<sup>22</sup> and financial incentive measures can expand this range to 2-10% RoRE (see **Appendix B** for selected performance incentives that will be in effect for RIIO-ED1).<sup>23</sup> One participant argued that performance incentives should be allowed to determine a greater proportion of total revenues and that the incentives themselves were overly generous to utilities, with the upside potential being too large and too easy to obtain compared to the downside penalty.

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<sup>18</sup> Upfront allowances compensate companies for the costs associated with priority projects (e.g., undergrounding power lines in national parks) but do not confer additional returns on those costs.

<sup>19</sup> See *supra* note 5 with accompanying text.

<sup>20</sup> The base RoRE varies in accordance with companies’ ability to capture a possible totex incentive that allows them to keep 50-70% of the value of any unused portion of Ofgem’s *ex ante* totex estimate.

<sup>21</sup> Office of Gas and Electricity Markets (U.K.) (Ofgem), *RIIO-T1: Final proposals for National Grid Electricity Transmission and National Grid Gas - Finance supporting document* (2012) at 37.

<sup>22</sup> See *supra* note 20.

<sup>23</sup> Office of Gas and Electricity Markets (U.K.) (Ofgem), *RIIO-ED1: Final determinations for the slow-track electricity distribution companies* (2014) at 46.



Of all output categories, participants appeared chiefly interested in better understanding RIIO's environmental incentives. Accordingly, this category of incentives is discussed in more detail below.

**Environmental Incentives:** RIIO's environmental objectives are at once lofty and limited. They are lofty because Ofgem hopes that the framework will enable Britain to fundamentally improve the sustainability of the electricity system as a whole, not just the way electricity is delivered. But RIIO's environmental agenda is also necessarily limited by the unbundled nature of the electricity industry in Britain; as British experts stressed during the roundtable, Ofgem can regulate energy network companies but has little, if any, authority to regulate energy sources or end-use consumers. In light of this constraint, RIIO *encourages* network companies to take measures that help more low-carbon energy to be brought online but does not make them responsible for shepherding this transition. Indeed, the government administers incentives for customer reductions in energy use via separate electric retail businesses<sup>24</sup> (though there is some holding company vertical integration) and also regulates emissions from generating facilities through separate programs.<sup>25</sup>

Analyzing RIIO's environmental aims at a more granular level, the regime effectively creates four partially overlapping categories of objectives for network operators to pursue:

1. Reduce their total business carbon footprint<sup>26</sup>;
2. Reduce the narrower category of emissions attributable to the operation of network infrastructure;
3. Reduce the visual impacts of network infrastructure in areas of scenic beauty; and
4. Facilitate the integration of lower carbon energy resources in the electricity system, by *inter alia*, promoting the integration of distributed energy resources and the adoption of "future network" technologies.

Each category of environmental objective is encouraged through a distinctive incentive scheme:

1. *Business carbon footprint:* Although Ofgem had emphasized the importance of reducing business carbon footprints in its initial RIIO guidance,<sup>27</sup> it opted only to subject this output category to reputational

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<sup>24</sup> Notably, electricity transmission and distribution utility costs make up around 25% of the residential customer bill, before VAT. See <https://www.ofgem.gov.uk/publications-and-updates/charts-outlook-costs-make-energy-bills#c-5884043569676578>.

<sup>25</sup> See Climate Change Act 2008, Chapter 27; Electricity Act 1989, Chapter 29. See also Council Directive 2003/87/EC, Establishing a scheme for greenhouse gas emissions allowance trading within the Community, Annex 1.

<sup>26</sup> Ofgem defines a distribution operator's business carbon footprint as "the total Greenhouse Gas (GHG) emissions arising directly or indirectly from the operations and activities of the licensee's Distribution Business during its confirmed reporting year." This broad term encompasses both emissions attributable to the operation of assets used to convey electricity as well as emissions attributable to upstream activities such as the maintenance of office spaces and procurement of relevant supplies. Ofgem, *Direction issued pursuant to Standard Condition 46.A of the electricity distribution licence directing distribution network operators to submit a business carbon footprint report* (2011) at 3. Available at: <https://www.ofgem.gov.uk/ofgem-publications/46589/direction-submit-bcf2011.pdf>. Therefore, Category 1 – a company's total business carbon footprint – incorporates the narrower category of emissions described here as Category 2. These two categories are presented separately in this report because, at present, Ofgem only offers financial incentives to reward reductions in the narrower subset of emissions that are due to the operation of a company's network infrastructure (i.e., Category 2).

<sup>27</sup> See, e.g., Office of Gas and Electricity Markets (U.K.) (Ofgem), *Handbook for implementing the RIIO model* (2010) at 36.

incentives in the first sets of RIIO price controls.<sup>28</sup> Under these reputational incentives, companies are required to publish annual performance reports indicating the extent to which they have reduced their business carbon footprint during the preceding year.<sup>29</sup>

2. *Emissions attributable to infrastructure:* RIIO applies financial incentives to encourage companies to reduce climate impacts caused by the operation of the grid. More specifically, RIIO-T1 requires transmission operators to set performance targets to reduce SF<sub>6</sub> leaks<sup>30</sup> throughout their networks and automatically adjusts companies' revenue to reflect their performance towards these targets.<sup>31</sup> Similarly, RIIO-ED1 offers distribution network operators the opportunity to compete for a monetary prize that rewards companies for reducing electricity losses throughout their networks.
3. *Visual impacts:* RIIO established designated funds from which operators can draw to bury power lines underground in areas of outstanding natural beauty.<sup>32</sup>
4. *Integration of low-carbon energy resources:* RIIO encourages cleaner downstream energy systems by establishing financial incentives that adjust allowable revenue upward or downward to reward the timely interconnection of new energy resources, which regulators hope will accelerate renewable energy integration. RIIO also makes available innovation funding and a discretionary reward scheme<sup>33</sup> for projects and operators that Ofgem believes contribute to the development of low-carbon energy systems (see following section). One British participant remarked that the innovation provisions are a “significant driver of change” toward “future network businesses.”

Although RIIO presently offers relatively few financial incentives for environmental targets, British participants emphasized that RIIO is a dynamic framework, not a fixed set of incentives; with time, the framework will likely evolve to provide increasingly clear incentives for smart grid initiatives that advance environmental objectives, they predicted. “RIIO 2, in eight years' time, is going to be a very significant price control because if we do see solar and local generation and electric vehicles all being a significant part of the process... then I think future regulators are going to start saying we want to make sure we are incentivizing those companies that have correctly managed their local area,” one expert said.

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<sup>28</sup> In a conversation following the roundtable meeting, one participant explained that there is an expectation that once a good and comparable set of data regarding business carbon footprints has been established in the first price control, Ofgem will set financial incentives in the following price controls.

<sup>29</sup> See, e.g., Ofgem's RIIO-T1 performance data website: <https://www.ofgem.gov.uk/network-regulation-%E2%80%93-riio-model/network-performance-under-riio/riio-t1-performance-data>.

<sup>30</sup> SF<sub>6</sub> is a potent greenhouse gas used extensively in network infrastructure.

<sup>31</sup> The size of this financial incentive is based upon a detailed formula that depends, among other factors, upon what Ofgem refers to as the “non-traded” price of carbon dioxide emissions. To see the formula that determines this incentive amount, refer to Special Condition 3E. Incentive in Respect of Sulphur Hexafluoride (SF<sub>6</sub>) Gas Emissions in, e.g., Special Conditions to National Grid Electricity Transmission Plc's electricity transmission licence (2013) at 89. Available at: <https://www.ofgem.gov.uk/ofgem-publications/53520/ngspcmops.pdf>

<sup>32</sup> Companies must seek Ofgem's advanced approval before withdrawing funds for these activities.

<sup>33</sup> The Environmental Discretionary Reward is available for all transmission operators in RIIO-T1 to encourage high standards in environmental management as well as to facilitate a low-carbon energy system. Notably, outside of the discretionary reward for DNOs to reduce network losses, there are no provisions in RIIO to encourage energy efficiency programs. As noted above, due to the unbundled nature of the electricity sector, regulators place incentives for demand reductions on retail suppliers rather than on network operators. See *supra* text accompanying note 24.

### **C. INNOVATION REWARDS**

As discussed in Part I, while RPI-X succeeded in applying downward pressure on costs, it had the undesired effect of discouraging investment in research and development.<sup>34</sup> RIIO seeks to remedy this shortcoming by establishing various innovation rewards for which companies can compete. The rewards are administered through three different funds:

1. Low-Carbon Networks (LCN) Fund: Created towards the end of the RPI-X regime, the LCN Fund offers up to £500 million per year in competitive awards for innovative proposals to improve the environmental performance of distribution networks;
2. Network Innovation Allowance (NIA): The NIA provides an annual allowance equal to 0.5-1.0% of base revenue to all transmission and distribution operators to fund small projects; and
3. Network Innovation Competition (NIC): The NIC is an annual competition that makes £27 million available to companies to fund up to 90% of costs for large-scale projects that demonstrate environmental benefits.

Participants broadly agreed that these funding opportunities had improved operators' incentive to take on innovative projects, though one participant was critical of the failure to force network operators to compete against third parties for this funding. Even so, the same participant applauded Ofgem for establishing innovation funding incentives that were enticing enough to lead companies to set up "future networks" divisions to help them compete for these rewards. "The creation of an innovation fund did lead many companies to set up 'future networks' divisions and those are well funded through the innovation scheme and certainly have begun to change the way that network companies think," yet another expert noted.

### **D. CUSTOMER ENGAGEMENT**

One of the central precepts of RIIO is that network companies can deliver more value to their customers by improving communication with them and taking greater account of their preferences.

As one British participant commented, under RPI-X the consumer was a "forgotten person," as network operators focused solely on appeasing Ofgem.<sup>35</sup> To compensate for this neglect, Ofgem assembled a broad stakeholder coalition during its assessment of RPI-X to identify the types of outputs that customers valued. Ofgem later used the information gathered during this process to determine the categories of outputs that network operators should target under RIIO.

Once the output categories were established, network operators were tasked with maintaining periodic contact with their customers during the price control period by administering annual customer satisfaction surveys. RIIO incorporates financial incentives to encourage the attainment of customer satisfaction targets, as gauged by survey results; specifically, under RIIO-T1, Ofgem will adjust a company's allowed base revenue

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<sup>34</sup> Tooraj Jamasb & Michael G. Pollitt, *Electricity sector liberalisation and innovation: An analysis of the UK's patenting activities*, 40 *Research Policy* (2011)

<sup>35</sup> One participant noted that the schism between network operators and their customers was neither accidental nor limited to Britain: networks were not supposed to focus on customers, but rather to serve as a platform for retail suppliers, who, in turn, were expected to interface with customers.

by up to 1% – upwards or downwards – to reflect scores on customer satisfaction.<sup>36</sup> In RIIO-ED1, the incentive is 1.5% of annual base revenue.

Notably, network operators are required to revisit the chosen output targets during the process of crafting business plans every eight years by asking their customers “what good service looks like.”

Participants were divided over the appropriateness of RIIO’s rewards for customer engagement. In particular, one British expert criticized these incentives as an easy opportunity for windfall profits and suggested that the stakeholder process was some way short of the negotiated settlement approach seen in parts of the US where industry parties actually submit agreed-upon incentive plans to the regulator for approval. However, another British participant argued that the stakeholder engagement process has allowed operators to understand how to tailor network improvements to capture the “low-hanging fruit.” Yet another British participant classified customer engagement as one of the truly “game-changing” features of RIIO.

### **E. PROCEDURAL INNOVATIONS**

RIIO introduced a number of notable reforms to reduce the administrative burdens imposed by the regulatory process. These reforms are described below.

**Elongated Price Intervals:** As noted in Part I.B, another way in which RIIO departs from RPI-X is that it extends the price control period from five to eight years. A British participant noted that the RPI-X price reviews typically took two years to complete, which meant that managers of network companies were spending nearly half of the price control period in consultation with Ofgem. This was considered an unreasonable burden on management. By elongating the price control period, thereby reducing the frequency of reviews, Ofgem hoped to communicate that management should focus on running their businesses rather than dealing with the regulator, this participant stated. Notably, a different British participant said that the longer price control period helped companies by providing greater upfront certainty in their dealings with suppliers.

Nevertheless, one British expert contended that, in light of uncertainty about the future proliferation of smart grid technologies, which should have faster payback periods, it was not clear what the theoretical basis for a *longer* price control was. He further argued that the eight-year label is merely “window-dressing” because the mid-period review that is built-in to ensure appropriateness of targeted outputs provides an opportunity to adjust price controls after just four years. Citing prior experiences with setting price controls for utility services in the UK, this expert predicted that the opportunity for a mid-period review would cause RIIO’s eight-year price control period to devolve into two separate four-year periods. Other experts challenged this critique, noting that the mid-period review is only intended to address major external changes (e.g., government policy) that materially affect costs or outputs and is not an opportunity to reset price controls.

**“Fast Track” Regulation:** Ofgem reserves the right to “fast-track” operators that submit initial business plans it deems satisfactory and “well-justified” by permitting them to complete the review process in one year, rather than the two and a half years that “slow-track” firms typically need. In future price control reviews, Ofgem may also fast-track firms that have established a track record of strong performance under RIIO by applying less scrutiny to their plans. Ofgem refers to this differentiated approach as “proportionate regulation.”

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<sup>36</sup> As outlined in the report appendices, a small portion of this financial incentive is attributable to performance on other metrics, including stakeholder satisfaction and engagement.

Most British participants asserted that the fast-track option provided fairly powerful incentives for companies to submit high-quality plans, particularly given that Ofgem rewards fast-tracked firms by granting them an additional 2.5% of allowed expenditure. Notably, however, one participant warned that reducing regulatory scrutiny of fast-tracked companies' planning efforts could harm consumers' interests.

### **PART III: POLITICAL CONSIDERATIONS**

Roundtable participants widely emphasized that the Commission should continue to invest in stakeholder engagement throughout the REV process and to implement reforms incrementally in order to build sufficient support for the changes.

**Stakeholder Engagement:** Several British roundtable participants stated that RIIO, like REV, treaded on extremely sensitive political territory. They noted that the subject of electricity prices had received an “unprecedented amount of political attention” in recent years and this was partly due to the country’s economic difficulties. Complicating matters further, the goals that RIIO seeks to address are inherently costly to achieve and would inevitably cause prices to rise, British participants said. With this context in mind, RIIO was introduced not so much to avoid cost increases but to contain them and make them more palatable; the idea was that by making outcomes more explicit and transparent, consumers would perceive additional value from a broader range of services provided.

Importantly, several commentators speculated that, despite the political toxicity of price increases in the UK, the binding nature of the UK’s climate commitments may have made British stakeholders more amenable to reform than their New York counterparts might be: “Our big advantage was the statutory obligation [to reduce emissions],” one British participant noted. “Once you have that constraint operating on the economy as a whole and the industry in particular, the direction of travel has been decided,” he said.

Even so, British participants emphasized that “selling” RIIO required extensive stakeholder engagement and credited the protracted two-year review process with providing the time needed to garner robust support. As one British expert noted, “people said two years is too long but, in Britain, the two years was absolutely time well spent.” The Commission’s meticulous efforts to engage stakeholders in the REV process to date were therefore considered extremely valuable.

British participants stated that utility shareholders were among the most difficult constituencies to rally in support of the reforms. Shareholders’ primary concern was that the proposed overhaul of rules that had permitted accelerated depreciation of assets might endanger companies’ financial health ratios, thereby harming their credit ratings. Some participants also identified civil servants at Ofgem as being slow to embrace the reforms, which they attributed to administrative sclerosis.

**Incremental Implementation:** Participants from the UK and New York alike emphasized the need to implement reforms incrementally. As a British expert noted, the incentives and output categories RIIO established require coordination among business departments that have traditionally operated in isolation. RIIO has also required companies to build capacity in areas in which they were weak, such as innovation, to look more closely at supply chains, and to partner with new outside organizations. These are profound changes for network companies and they take time to implement, the expert stressed. Several participants from New York echoed this sentiment. “Utilities are responsive,” one participant noted. “Pick a few things to focus on first, claim success, and then go from there,” the participant suggested.

## PART IV: EARLY INDICATIONS OF PERFORMANCE UNDER RIIO

**Initial Results of the Price Controls for Transmission:** With more than a full year now having passed since the RIIO-T1 price controls went into effect, early indications of performance have been encouraging; companies have generally surpassed their performance targets and are therefore earning additional returns above base revenue. Participants cautioned, however, that it is still too early to draw robust conclusions as to how the companies will perform throughout the duration of the eight-year price control, and that many open questions remain. For instance, how much of the outperformance is genuine efficiency and how much is back-loading of expenditure during the price control period?<sup>37</sup>

British officials observed that business plans submitted during the RIIO price control reviews were of far higher quality than regulatory submissions during RPI-X. Under RPI-X, submissions were primarily “geared towards convincing the regulator that costs had increased,” one expert noted. Under RIIO, by contrast, Ofgem has asked for and received much more comprehensive documents. “It’s been a sea change,” he added.

Experts also noted that Ofgem staff has learned a lot about what constitutes a “good” business plan between RIIO-T1 and RIIO-ED1. When it came time to review distribution companies’ plans, regulators had learned to insist that companies provide more explicit indications of how their plans respond to customer feedback and of how the companies will maintain accountability to their customers moving forward. They had also learned to demand that companies include life-cycle cost-benefit analyses and submit benchmarking analyses in support of their expenditure proposals. Notably, regulators also observed significant improvements in distribution companies’ plans between their draft and final submissions with an additional £750 million in costs being removed from plans between the first and second rounds of submissions.

One of the more auspicious trends that regulators observed in the RIIO-ED1 business plans is that companies plan to invest in smart grid enablers during RIIO-ED1 to reap savings in RIIO-ED2. As one British expert explained, the proliferation of distributed energy resources creates new challenges for utilities but it also creates significant opportunities to cut costs. Specifically, officials expect large increases in load to emerge towards the end of RIIO-ED1 and beginning of RIIO-ED2, which they fear could trigger very large cost increases. To contain these costs, utilities need to implement smart technologies now, which, *inter alia*, can enable utilities to release latent capacity without building additional infrastructure.

## PART V: EVOLVING INDUSTRIAL ORGANIZATION?

Due to a shortage of reserve generating capacity,<sup>38</sup> the UK must not only decarbonize its existing generating fleet, but must increase its total generating capacity as well. Some British participants suggested that the need to expand sustainable energy supplies presaged a relaxation of the UK’s unbundling rules in the transmission sector, where ownership unbundling is required.<sup>39</sup> As a case in point, one expert noted that the UK Department of Energy and Climate Change had recently sent a letter to the Gas and Electricity Markets

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<sup>37</sup> In subsequent conversations, a participant suggested that early RIIO results may reflect underinvestment by utilities, which would contradict RIIO’s goals and is a source of concern for New York regulators.

<sup>38</sup> Participants noted that reserve margins may fall below 5% of projected peak winter demand as a result of recent closures of fossil fuel generators and the variability of renewable generation sources.

<sup>39</sup> Only legal unbundling of distribution and retail operations is required. However, as one roundtable expert noted, most retailers and generators have now sold off their distribution assets to entities with no interest in generation or retail businesses in the UK. For more on the nature of unbundling in the UK electricity market *see* Stephen Davies & Catherine Waddams Price, *Does Ownership Unbundling Matter? Evidence from UK Energy Markets*, 46(2) INTERECONOMICS (2007).

Authority, Ofgem's governing body, in which it expressed concern that the "existing GB [Great Britain] ownership unbundling requirements might constrain investment in the UK." The letter further indicates that the UK may relax restrictions against allowing transmission operators to own generating assets in areas where there is "no real likelihood of discrimination"<sup>40</sup> in order to stimulate investment in additional generating capacity.<sup>41</sup> As long as capacity tightness persists, a British expert speculated, the government is going to support imaginative schemes that "promote security of supply combined with a sustainably friendly approach." As a consequence, "the megawatt levels that companies are allowed to invest in, which is virtually nothing, might go up," he added.

Some participants from New York cited similar pressures to loosen the rules prohibiting vertical integration. They noted that State officials may be tempted to allow utilities to own distributed generation assets because they consider utilities uniquely qualified to make the large-scale investment needed to bring significant quantities of renewable distributed resources onto the grid quickly and strategically (i.e., where it confers most value to the system). Utilities are also obligated to respond to public policy considerations in a way that competitive providers are not, they noted. In response, a British expert cautioned that while it would be unrealistic (and perhaps undesirable) to prohibit utilities from owning distributed resources, it is essential that their distribution businesses be properly ring-fenced from their generation and/or retail businesses.<sup>42</sup> Without proper ring-fencing, there is a real risk that the network operator would discriminate in favor of its own generation assets, the expert cautioned. Companies are likely to do this, he noted, by claiming that other distributed energy resources are of "lower quality." Regulators in New York should draft appropriate safeguards against this potential anti-competitive behavior from the start, this expert advised.<sup>43</sup>

## **PART VI: GETTING PRICES RIGHT**

While the roundtable focused on how regulators determine revenue allowances in accordance with public policy objectives, several participants asserted that the pricing methodology utilities use to collect these revenues is at least as important to achieving the Commission's goals, particularly the goal of reducing peak demand. As one expert noted, price signals, not network companies' revenue, are the primary drivers of distributed generation and demand-side management. And while the two concepts are related, they are distinct. "It's very easy to get the total revenue right but then charge it out in a way that completely messes up incentives on [distributed generation] and [demand-side management]," this expert cautioned. Another expert noted that in states with retail competition such as New York, equipping the population with "real-time meters" would be key to expanding demand response programs and, by extension, enabling successful peak-shaving efforts. "At some point, we'll have to confront these rate design issues," this expert added.

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<sup>40</sup> Concerns about discrimination are most likely to be alleviated where a transmission line would be connected to only a single generating asset or single group of interconnected generating assets. This scenario is particularly likely to occur in the context of new off-shore wind generation.

<sup>41</sup> Letter from Edward Davey to David Gray at Ofgem, (July 16, 2014), available at <https://www.gov.uk/government/publications/letter-from-edward-davey-announcing-his-intention-to-amend-the-ownership-unbundling-provisions-of-the-electricity-act-1989-and-gas-act-1986>.

<sup>42</sup> On the importance of protecting against discrimination in the distribution sector as distributed generation increases, see Michael G. Pollitt, *Ownership Unbundling of Energy Networks*, 46(2) INTERECONOMICS (2007).

<sup>43</sup> Notably, subsequent conversations with a meeting participant revealed that New York has had a Vertical Market Power policy in place since 1998.

## *Conclusion*

Throughout the discussion, roundtable participants emphasized that RIIO was a logical progression in the UK's long history of incentive regulation and that a similar reform would represent a more significant break from the conventions that presently govern utility regulation in New York. Still, RIIO incorporates several features that may be instructive to the Commission as it pursues its reforms. In particular, RIIO's use of rigorous *ex ante* revenue allowances, a longer-term rate plan, and enhanced integration of diverse performance incentives may be steps New York State can take to advance the goals of the REV proceeding.

Roundtable participants also stressed that Commission should take certain procedural precautions in order to build broad support for the initiative and improve its chances of success. Specifically, they encouraged the Commission to continue to engage stakeholders throughout the REV process and to implement reforms incrementally so as to allow industry participants to gain familiarity with a fundamentally different system and demonstrate intermediate progress.

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## Appendix A: Selected financial performance incentives in RIIO-T1

*Italics indicate values set by Ofgem*

Operator	Output category	Metric	Initial target <sup>a</sup>	Financial incentive <sup>b</sup>
National Grid Electricity Transmission	Reliability and availability	Energy not supplied (ENS)	316 MWh	±£16k/MWh
	Environment	SF <sub>6</sub> leakage	1.7%	Symmetrical formula tied to non-traded price of CO <sub>2</sub> emissions
	Customer service	Customer satisfaction	6.9/10	±0.9% total annual revenue
		Stakeholder satisfaction	5.0/10	±0.1% total annual revenue
	Customer connections	Discretionary stakeholder engagement incentive		<i>0-0.5% allowed base revenue</i>
	Comply with prevailing obligations for connections		Possible penalty for under-delivery	
Scottish Hydro Electric Transmission Ltd	Reliability and availability	Energy not supplied (ENS)	120 MWh	±£16k/MWh <sup>c</sup>
	Environment	SF <sub>6</sub> leakage	1.5%	Symmetrical formula tied to non-traded price of CO <sub>2</sub> emissions
	Customer service	Customer satisfaction survey	5.0/10	±0.5% allowed base revenue
		Discretionary stakeholder engagement incentive		<i>0-0.5% allowed base revenue</i>
	Customer connections	Comply with prevailing obligations for connections		<i>-0.5-0% allowed base revenue</i>
Scottish Power Transmission	Reliability and availability	Energy not supplied (ENS)	224.4 MWh	±£16k/MWh <sup>c</sup>
	Environment	SF <sub>6</sub> leakage	1.5%	Symmetrical formula tied to non-traded price of CO <sub>2</sub> emissions (~£580/kg in 2013-14)
	Customer service	Customer satisfaction survey	50/100	±1% allowed base revenue
		Discretionary stakeholder engagement incentive		<i>0-0.5% allowed base revenue</i>
	Customer connections	Comply with prevailing obligations for connections		<i>-0.5-0% allowed base revenue</i>
All TOs	Environment	Environmental discretionary reward to encourage TOs to achieve high standards in environmental management as well as facilitate the industry to move towards a low carbon energy system		Up to £32m during RIIO-T1, with annual assessments

<sup>a</sup> Targets are for 2013-14 submission year, unless otherwise noted

<sup>b</sup> Determined annually and assessed with a two-year lag, unless otherwise noted

<sup>c</sup> Limited to 3% of allowed revenue

## Appendix B: Selected financial performance incentives in RIIO-ED1

*Italics indicate values set by Ofgem*

DNO Group	Operator	Output category	Metric	Initial target <sup>a</sup>	Financial incentive <sup>b</sup>	
Electricity North West Ltd	Electricity North West	Reliability and availability	Customer interruptions (CI)	20% reduction by 2019	±2.5% return on regulatory equity (RoRE)	
			Customer minutes lost (CML)	20% reduction by 2019		
		Customer service	Customer satisfaction survey	8.5/10	±1.5% of base revenue	
			Complaints index	90% resolved within one day 100% resolved within five days		
			Stakeholder engagement incentive			
		Customer connections	Business days to quote	6 (single connection) 10 (2-4 connections) 25 (>4 connections)	-0.4-0.9% of base revenue	
			Business days to connect	30 (single connection) 40 (2-4 connections) 50 (>4 connections)		
			Incentive on connections engagement			
			-0.9-0% of base revenue			
Northern Powergrid	Northern Powergrid Northeast	Reliability and availability	CI	58 by 2023	±2.5% RoRE	
			CML	47 by 2023		
		Customer service	Customer satisfaction survey	85% by 2018	±1.5% of base revenue	
			Complaints index	80% resolved within one day 95% resolved within 31 days 95% resolved at first contact		
			Stakeholder engagement incentive			
		Customer connections	Business days to quote	8 (single connection) 11 (2-4 connections)	-0.4-0.9% of base revenue	
			Business days to connect	42 (single connection) 52 (2-4 connections)		
			Incentive on connections engagement			
				-0.9-0% of base revenue		
	Northern Powergrid Yorkshire	Reliability and availability	CI	60 by 2023	±2.5% RoRE	
			CML	51 by 2023		
			Customer service	Customer satisfaction survey		85% by 2018
			Complaints index	80% resolved within one day 95% resolved within 31 days 95% resolved at first contact		
		Customer connections	Business days to quote	8 (single connection) 11 (2-4 connections)	-0.4-0.9% of base revenue	
			Business days to connect	42 (single connection) 52 (2-4 connections)		
Incentive on connections engagement						
			-0.9-0% of base revenue			
Scottish and Southern Energy Power Distribution	Scottish Hydro Electric Power Distribution	Reliability and availability	CI	5% reduction by 2023	±2.5% RoRE	
			CML	23% reduction by 2023		
		Customer service	Customer satisfaction survey	8.2/10	±1.5% of base revenue	
			Complaints index	8.33		
			Stakeholder engagement incentive			
		Customer connections	Business days to quote	7.90 (single connection) 12.33 (2-4 connections)	-0.4-0.9% of base revenue	
			Business days to connect	31.57 (single connection) 47.44 (2-4 connections)		
			Incentive on connections engagement			
				-0.9-0% of base revenue		
	Southern Electric Power Distribution	Reliability and availability	CI	9% reduction by 2023	±2.5% RoRE	
			CML	26% reduction by 2023		
			Customer service	Customer satisfaction survey		8.2/10
			Complaints index	8.33		
		Customer connections	Business days to quote	7.37 (single connection) 11.13 (2-4 connections)	-0.4-0.9% of base revenue	
			Business days to connect	35.55 (single connection) 42.47 (2-4 connections)		
Incentive on connections engagement						
			-0.9-0% of base revenue			

<sup>a</sup> Targets are for 2015-16 submission year, unless otherwise noted

<sup>b</sup> Determined annually and assessed with a two-year lag, unless otherwise noted

*Italics indicate values set by Ofgem*

DNO Group	Operator	Output category	Metric	Initial target <sup>a</sup>	Financial incentive <sup>b</sup>	
SP Energy Networks	SP Distribution	Reliability and availability	CI	7% reduction by 2023	±2.5% RoRE	
			CML	16% reduction by 2023		
		Customer service	Customer satisfaction survey	8.32/10 (improving 0.06 yearly)	±1.5% of base revenue	
			Complaints index	8.33		
		Customer connections	Stakeholder engagement incentive			-0.4-0.9% of base revenue
			Business days to quote	8.21 (single connection)		
				11.73 (small project)		
	Business days to connect		42.08 (single connection)			
			52.70 (small project)			
	Incentive on connections engagement			-0.9-0% of base revenue		
	SP Manweb	Reliability and availability	CI	7% reduction by 2023	±2.5% RoRE	
			CML	16% reduction by 2023		
		Customer service	Customer satisfaction survey	8.32/10 (improving 0.06 yearly)	±1.5% of base revenue	
			Complaints index	8.33		
Customer connections		Stakeholder engagement incentive			-0.4-0.9% of base revenue	
		Business days to quote	8.21 (single connection)			
			11.73 (small project)			
	Business days to connect	42.08 (single connection)				
		52.70 (small project)				
Incentive on connections engagement			-0.9-0% of base revenue			
UK Power Networks	Eastern Power Networks	Reliability and availability	CI	Average 52.1 during RIIO-ED1	±2.5% RoRE	
			CML	Average 36.5 during RIIO-ED1		
		Customer service	Customer satisfaction survey	Average 8.3/10 during RIIO-ED1	±1.5% of base revenue	
			Complaints index	70% resolved within one day 95% resolved within 31 days		
		Customer connections	Stakeholder engagement incentive			-0.4-0.9% of base revenue
			Business days to quote	8.2 (single connection)		
				11.7 (small project)		
	Business days to connect		42 (single connection)			
			53 (small project)			
	Incentive on connections engagement			-0.9-0% of base revenue		
	London Power Networks	Reliability and availability	CI	Average 22.7 during RIIO-ED1	±2.5% RoRE	
			CML	Average 30.3 during RIIO-ED1		
		Customer service	Customer satisfaction survey	Average 8.1/10 during RIIO-ED1	±1.5% of base revenue	
			Complaints index	70% resolved within one day 95% resolved within 31 days		
		Customer connections	Stakeholder engagement incentive			-0.4-0.9% of base revenue
			Business days to quote	8.2 (single connection)		
				11.7 (small project)		
	Business days to connect		42 (single connection)			
			53 (small project)			
	Incentive on connections engagement			-0.9-0% of base revenue		
	South Eastern Power Networks	Reliability and availability	CI	Average 49.7 during RIIO-ED1	±2.5% RoRE	
			CML	Average 35.9 during RIIO-ED1		
		Customer service	Customer satisfaction survey	Average 8.3/10 during RIIO-ED1	±1.5% of base revenue	
			Complaints index	70% resolved within one day 95% resolved within 31 days		
Customer connections		Stakeholder engagement incentive			-0.4-0.9% of base revenue	
		Business days to quote	8.2 (single connection)			
			11.7 (small project)			
	Business days to connect	42 (single connection)				
		53 (small project)				
Incentive on connections engagement			-0.9-0% of base revenue			

<sup>a</sup> Targets are for 2015-16 submission year, unless otherwise noted

<sup>b</sup> Determined annually and assessed with a two-year lag, unless otherwise noted

*Italics indicate values set by Ofgem*

DNO Group	Operator	Output category	Metric	Initial target <sup>a</sup>	Financial incentive <sup>b</sup>
Western Power Distribution (fast-tracked)	WPD East Midlands	Reliability and availability	CI	51.9	±2.5% RoRE
			CML	37.8	
		Customer service	Customer satisfaction survey	<i>8.2/10</i>	±1.5% of base revenue
			Complaints index	8.33	
			Stakeholder engagement incentive		
		Customer connections	Business days to quote	<i>8.21 (single connection)</i>	-0.4-0.9% of base revenue
				<i>11.73 (small project)</i>	
			Business days to connect	<i>42.08 (single connection)</i>	
				<i>52.70 (small project)</i>	
			Incentive on connections engagement		-0.9-0% of base revenue
	WPD South Wales	Reliability and availability	CI	50.1	±2.5% RoRE
			CML	27.5	
		Customer service	Customer satisfaction survey	<i>8.2/10</i>	±1.5% of base revenue
			Complaints index	8.33	
			Stakeholder engagement incentive		
		Customer connections	Business days to quote	<i>8.21 (single connection)</i>	-0.4-0.9% of base revenue
				<i>11.73 (small project)</i>	
			Business days to connect	<i>42.08 (single connection)</i>	
				<i>52.70 (small project)</i>	
			Incentive on connections engagement		-0.9-0% of base revenue
	WPD South West	Reliability and availability	CI	55.7	±2.5% RoRE
			CML	35.8	
		Customer service	Customer satisfaction survey	<i>8.2/10</i>	±1.5% of base revenue
			Complaints index	8.33	
			Stakeholder engagement incentive		
		Customer connections	Business days to quote	<i>8.21 (single connection)</i>	-0.4-0.9% of base revenue
				<i>11.73 (small project)</i>	
			Business days to connect	<i>42.08 (single connection)</i>	
			<i>52.70 (small project)</i>		
		Incentive on connections engagement		-0.9-0% of base revenue	
WPD West Midlands	Reliability and availability	CI	86.7	±2.5% RoRE	
		CML	51.1		
	Customer service	Customer satisfaction survey	<i>8.2/10</i>	±1.5% of base revenue	
		Complaints index	8.33		
		Stakeholder engagement incentive			
	Customer connections	Business days to quote	<i>8.21 (single connection)</i>	-0.4-0.9% of base revenue	
			<i>11.73 (small project)</i>		
		Business days to connect	<i>42.08 (single connection)</i>		
			<i>52.70 (small project)</i>		
		Incentive on connections engagement		-0.9-0% of base revenue	
All DNOs	Environment	Electricity losses discretionary reward: encourages DNOs to undertake additional losses reduction actions over and above those set out in business plans		Up to £32m in three tranches over RII0-ED1; up to £8m in year two, up to £10m in year four, and up to £14 in year six	

<sup>a</sup> Targets are for 2015-16 submission year, unless otherwise noted

<sup>b</sup> Determined annually and assessed with a two-year lag, unless otherwise noted