Utilities in the RIIO world

How the UK regulator's new model for incentivising innovation will benefit energy network businesses and their customers

by Dr Mike Lees, EA Technology

www.eatechnology.com

ea technology

Why RIIO?

RIIO is an important new part of the UK's framework for regulating energy network businesses, designed to benefit the companies, their customers and the environment.

It will achieve this by doing what regulators do best – acting as 'surrogate customers' in markets which are naturally monopolistic, to drive new waves of innovation and efficiencies, which are normally only found in competitive markets.

The UK regulator, Ofgem, operates through price controls, setting the amount of money (allowed revenue) that network companies earn. But RIIO is going much further than just 'setting prices'. It now obliges companies to create and implement business plans which will deliver:

- Networks which perform how customers want them to perform and which are value for money
- Smart grid networks that reduce carbon emissions and improve how people live
- Good returns on investment for shareholders for the companies that perform well

Above all, it will ensure that the £30+ billion investment needed in Britain's energy networks over the next ten years is spent wisely and well.

Dr Mike Lees
EA Technology

> "The UK's RIIO model warrants close study by any country seeking to create low carbon smart grids at costs which are affordable for taxpayers and consumers."

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More information?

This booklet has been produced by EA Technology to help those who would like to understand RIIO but don't have the time, or sufficient in depth knowledge to read either the Ofgem publications or the business plans of the British energy network companies. This document was originally developed in 2015 prior to the start of RIIO-ED1. It was rebranded, with no material change to content, in 2019.

Find out more at: www.ofgem.gov.uk

What is RIIO?

> RIIO rewards companies that deliver against well-justified, well-written business plans and penalises those that do not.

RIIO is the new price control framework developed and adopted by the UK energy market regulator: the Office of Gas and Electricity Markets (Ofgem). Its aim is to benefit consumers by providing energy network companies with strong incentives to deliver a low carbon economy and a sustainable energy sector, at lower cost than under previous models.

Implemented first for transmission companies in 2013, it has now been applied to distribution companies. RIIO employs rewards and penalties which incentivise utilities to:-

- Put stakeholders at the heart of their decision making process
- Invest efficiently to ensure continued safe and reliable services
- Innovate to reduce network costs for current and future consumers
- Play a full role in delivering a low carbon economy and wider environmental objectives

Winners & losers

Companies that meet Ofgem's criteria are rewarded financially and with a lighter touch regulatory approach. Those that do not will see lower financial returns and a greater regulatory scrutiny.

Living in the RIIO world

RIIO obliges utilities to engage with a wide range of stakeholders, to establish what is important to them and the willingness of customers to pay. In consultation with stakeholders, they must then produce a business plan, which clearly communicates and justifies their long-term strategy and shorter-term tactical plans and describes how they intend to deliver them.

Like any conventional commercial company, regulated utilities will generate profit for their shareholders if their prices are competitive, they deliver good service to customers and run their businesses efficiently.

In RIIO regulated businesses, the regulator is the final arbiter of success, rather than the market alone. Companies must re-work their business plans if the regulator judges that their outputs are inappropriate or costs are inefficient. Balanced against that, the regulator is mindful that utilities must be sustainable and that well-run companies have the right to make profits.

> “Stakeholders’ views are at the heart of RIIO. Each company’s business plans must reflect their stakeholders’ views and demonstrate good value for money.”

How RIIO works

Revenue

Constraint on revenue set up front to ensure

- Timely and efficient delivery
- Network companies remain financeable
- Transparency and predictability
- Balance costs paid by current and future consumers

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Incentives

Deliver outputs efficiently over time

- Focus on longer term, including eight year control periods
- Rewards and penalties for output delivery performance
- Symmetric upfront efficiency incentive rate for all costs
- Use uncertainty mechanisms with added value for customers

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Innovation

Technical & commercial innovation exchanged throughout

- Core incentives in price control package
- Option of giving responsibility for delivery to third parties
- Innovation stimulus to give support and ‘prizes’ for innovation, building on Low Carbon Networks Fund (LCN) fund

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Outputs

Outputs set out in licence

- Consumers know what they are paying for
- Incentives for network companies to deliver
- Outputs reflect enhanced engagement with stakeholders

RIIO fast-tracking

Fast-tracking is an additional incentive for companies to submit business plans which are of high enough quality to be approved early in the process.

Fast tracked companies have their price control agreements established quickly, so they can get a head start on preparing for the next price control. The reputation of a fast tracked company is improved and they become an example for other companies.

Incentives

RIIO has transparent rewards and penalties, which are related to output delivery. There are efficiency incentives for underspending and penalties for overspend against budget. Incentives are designed to provide long-term value for money for consumers.

Innovation

RIIO includes a time-limited innovation stimulus for electricity and gas networks. These are open to projects run by network companies and third parties at any point in the innovation cycle, for innovations related to delivering the networks required for a low carbon energy sector. Substantial prize funds are available for networkcompanies and third parties that successfully implement new commercial and charging arrangements to help deliver a sustainable energy sector.

Ouputs

At the price control review, Ofgem sets the outputs that network companies are expected to deliver to ensure safe and reliable services, nondiscriminatory and timely connection and access terms, customer satisfaction, limited impact on the environment and delivery of social obligations.

> “Rewards, as well as penalties, are powerful drivers for utility companies to deliver business plans which satisfy their stakeholders and the regulator.”

Stakeholder engagement

RIIO requires companies to engage with a broad range of stakeholders, including domestic and business customers, distributed generation customers, vulnerable customers, agencies, energy suppliers, ‘expert’ stakeholders, network company staff and future customers.

Network companies must undertake detailed stakeholder engagement and demonstrate how this has been reflected in their business plans. Business plans should contain clear evidence that network companies have engaged with a broad range of stakeholders and have used engagement mechanisms that are targeted to reflect different stakeholders’ needs.

The most transparent network companies use their websites to publish stakeholder views and to detail how these have influenced their business plans.

Examples of effective stakeholder engagement range from debates over how to route HV lines in a national park, to choosing between improving performance or reducing costs.

> “Engagement mechanisms include surveys, workshops, expert panels, focus groups, 1:1 interviews, forums, roadshows and critical friends panels.”

Business plans

RIIO business plans must demonstrate

- Alignment with stakeholder requirements
- Good value to customers in the short, medium and long term
- Financial security and viability
- Understanding of uncertainties and risks
- Preparedness for the future

RIIO business plans need to demonstrate that each company has

- Considered the possible future requirements of their networks
- Discussed these requirements with stakeholders
- Formed a robust, evidenced view of what are appropriate costs to achieve the current and future requirements
- Formed a robust, evidenced view of how these costs should be shared between current and future customers

Plans also need to align with the regulator's Strategy Decision Document, be easy to understand by stakeholders and show that the company:

- Will deliver in the interests of both current and future customers
- Can meet the challenges associated with facilitating the transition to a low carbon economy
- Has taken account of the various risks and uncertainties
- Has a strategy to efficiently and effectively deal with these risks and uncertainties whilst maintaining delivery

Plans should demonstrate that both the costs of delivering the outputs and the costs of financing the business are efficient, and that cost projections are realistic and efficient. Expenditure is expected to be clearly linked to relevant outputs.

Outputs

> Can your business prove that your stakeholders agree with what you are planning to do - and say why they approve? RIIO utilities can!

RIIO requires companies to provide detailed evidence of stakeholder support for each output and its costs. Outputs are at the heart of RIIO business plans, because base revenues and incentives are linked to their delivery.

Output comprise

Primary outputs relate to network services provided directly to customers. They are designed to be controllable by the network company, measurable, auditable and comparable. Examples are Customer Interruptions (equivalent to SAIFI) and Customer Minutes Lost (equivalent to SAIDI). The following output categories are common across RIIO-T1 (Electricity and Gas Transmission), RIIO-GD1 (Gas Distribution) and RIIO-ED1 (Electricity Distribution):

- Safety
- **Environment**, including all aspects of carbon reduction
- **Customer satisfaction & service**
- **Connections**, including connecting customers in a timely and efficient way
- **Reliability and availability,** including minimising the number and duration of interruptions

In addition RIIO-ED1 and RIIO-GD1 have an additional output category:

- **Social obligations**, including partnering to share knowledge and establish best practice

Secondary deliverables are indicators of performance which may be used in support of the required primary outputs.

Examples are Asset Health Index, which can be used to determine how likely an asset is to fail, and Load Index, which provides a measure of the loading of substations. Accurate forecasting of secondary deliverables helps to justify future projected expenditure.

Innovation incentives and strategies

> Innovation Strategy is expected to be at the heart of business plans. Threads of innovation should run throughout the plan and not be restricted to a specific innovation section.

RIIO provides strong incentives to innovate – where there are risks involved, benefits do not accrue directly to a network operator but will benefit consumers, or they are linked with the transition to a low carbon economy.

RIIO incentives cover many types of innovation: technological, operational, commercial and/or contractual. Companies will also be expected to collaborate with other parties, share the outputs of innovation with other operators and give leverage to external funding where possible.

RIIO has three innovation mechanisms:

The Network Innovation Competition (NIC)

A single annual competition for electricity transmission and distribution that funds largescale, innovative projects with low carbon or other environmental benefits. Companies can apply to have a maximum of 90 per cent of the project costs funded through the NIC.

The Network Innovation Allowance (NIA)

A use-it-or-lose-it allowance that each network company receives to fund small-scale innovative projects as part of their price control settlement, set at between 0.5 and 1 per cent of allowed revenue.

The Innovation Rollout Mechanism (IRM)

A revenue adjustment mechanism, designed to make funding available for the roll-out of proven low carbon or environmental innovations within the price control period.

Network companies are required to set out an innovation strategy as part of their business plans.

This should include:

- What the network operator aims to achieve
- How it will build on current learning and smart grid deployment to test new techniques, including arrangements with customers and other parties in the value chain
- Evidence of how innovation funding has already been used effectively and resulted in improved outcomes for consumers
- Planned approaches for successful roll-out of innovation into business as usual
- Company processes for reviewing and updating innovation strategies

Incentive mechanisms

> RIIO uses incentives to drive innovation and the delivery of outputs.

RIIO rewards companies that do well with an attractive rate of return: those that demonstrably do not earn lower returns.

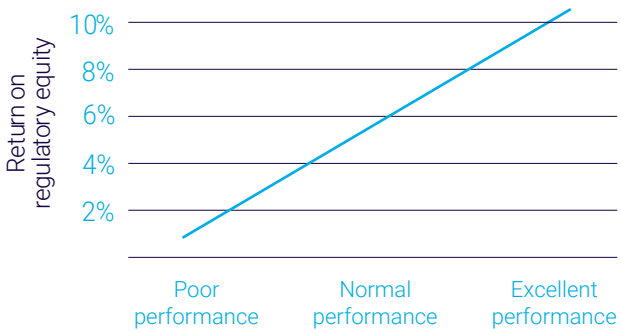
Financial incentives are subject to

- Clarity of the output being incentivised
- Confidence in the data being used to assess the output
- Evidence that the output is important to customers
- Assurance that the output is not covered by other incentives or obligations

The strength of incentives reflects the value that consumers attach to the delivery of outputs and the network company's degree of control over them. The regulator publishes 'league tables', showing how network companies compare with their peers.

RoRE financial incentives

When a network company earns a financial reward, the amount of revenue it is allowed to raise from customers rises, increasing its Return on Regulatory Equity (RoRE)1. Conversely, a penalty means that the amount of revenue it can raise decreases.



Some financial incentives have caps and collars which limit the rewards and penalties that a company can receive. This protects customers from excessive bills and protects the company from extreme financial difficulties which might prevent it from operating.

RIIO incentives apply to Electricity Transmission, Gas Transmission, Electricity Distribution and Gas Distribution, but are tailored to each sector.

1 *Return on Regulatory Equity (RoRE) is the return on the (notional) proportion of the regulatory asset value (RAV) that is financed by equity.*

Calculating rewards

> Fast-tracked companies receive additional revenue of 2.5% of Totex and an enhanced Efficiency Incentive.

RIIO applies an Information Quality Incentive (IQI) and an Efficiency Incentive to every network company.

Once a price control settlement has been determined, the Efficiency Incentive encourages them to reduce the cost of output delivery. Companies can keep a percentage of underspend against agreed expenditure. Companies also fund the same percentage of overspend. The remaining savings or losses are passed through to consumers.

The IQI is used to calculate the Efficiency Incentive rate and encourages companies to provide accurate and efficient cost forecasts in their business plans. It sets the strength of the upfront Efficiency Incentive for each company, according to the difference between the company's forecast and the regulator's assessment of its efficient expenditure requirements.

The IQI ratio set for each company is the company's view of costs, divided by the regulator's assessment of costs. Thus, if the company and the regulator have the same view of efficient expenditure, the company will be able to achieve a full return on its cost of capital.

A fast-tracked company receives upfront additional revenue of 2.5 per cent of Totex (Opex + Capex) in lieu of the IQI settlement and an enhanced Efficiency Incentive rate compared with non-fasttracked companies.

Finance

> Companies need to be able to finance expenditure, with a fair balance of risk and reward for customers and shareholders.

Network companies are usually financed through a combination of equity and debt. Regulators typically ensure that financing is efficient by calculating a return on the value of the capital employed in the business (the regulatory asset value or RAV) that is at least equal to a notional efficient company's2 estimated cost of capital. Agreeing the Weighted Average Cost of Capital (WACC) with network companies is therefore an important foundation of a price control.

In addition, RIIO has established several principles to ensure network expenditure can be financed efficiently, and that incentives are fairly applied, including:

- Totex3 – capitalisation policy based on equalising incentives between operating and capital expenditure
- Asset lives based on the average economic life expectancy of those assets
- The Capital Asset Pricing Model (CAPM), supported by other approaches to determine the cost of equity
- Cost of debt based on a long-term trailing average
- Gearing based on a company's risk exposure

RoRE serves as a tool for checking that the expected outcomes from RIIO are financeable. The analysis takes a holistic view of all elements of the price control settlement, to ensure that together they provide a fair balance of risk and reward for customers and shareholders. This approach has been well received by stakeholders.

2 *RIIO judges that a notional efficient network company should have a 'comfortable investment grade' credit rating (i.e. in the BBB to A range)*

3 *In RIIO there is no difference in the way that Capex and Opex are treated. Both are expected to be financed 80% from a "slow pot" (long-term investment, the conventional treatment for Capex) and 20% from a "fast pot" (revenue expenditure, recognised in the regulatory accounts in the financial year that the cost is incurred, the conventional treatment for Opex)*

Accessing business plans

> Ofgem focuses attention where it is expected to generate most value, by fast-tracking high quality, well-justified business plans.

Ofgem focuses attention where it is expected to generate most value, by fast-tracking high quality, well-justified business plans that closely match its independently-formed view of the required total expenditure across the price review period.

So RIIO business plans should align with the regulator's strategy, be owned by the network company and be transparent.

If a business plan meets the regulator's criteria, the company may be 'fast-tracked'. If not, the regulator will 'slow-track' the plan and spend time working with the operator to improve it.

The regulator considers the quality of plans by means including:

- Comparing companies' proposed expenditure with its own estimates
- A review of the justification for expenditure
- Evidence of efficiency
- Total expenditure (Totex) benchmarking
- Disaggregated benchmarking
- Asset volumes and unit cost analysis
- Historical trend analysis
- Expert review
- Individual project review

Business plan ratings

Ofgem uses a "traffic light" approach to rate and compare network operators' business plans.

The results of the first RIIO business plans submitted by regulated UK Distribution Network Operators (DNOs) *(see figure 1)*

Only Western Power Distribution (WPD) had a green light in all categories and was fast tracked. *(see figure 2)*

In RIIO-T1 and RIIO-GD1, network companies that had some categories judged as amber (and none red) were asked to resubmit business plans for fast-track assessment and on re-submission they were fast tracked. However, in RIIO-ED1 there was no second chance to be fast-tracked and the slow track business plans were re-assessed.

Figure 1.

DNO group	License	Process	Outputs	Resources - efficient costs	Resources - efficient finance	Uncertainty and risk
Western Power Distribution	WEMD					
	EMID					
	SWALES					
	SWEST					
Electricity North West Ltd	ENWL					
Northern Power Grid	NPgN					
	NPgY					
UK Power Networks	LPN					
	SPN					
	EPN					
SP Energy Networks	SPD					
	SPMW					
SSE Power Distribution	SSEH					
	SSES					

Business plans are broadly accepted Some slow track will be required A lot of slow track will be required

Figure 2. Summary assessment of the DNO's slow-track business plans 2014.

DNO group	License	Process	Outputs	Resources - efficient costs	Resources - efficient finance	Uncertainty and risk
Electricity North West Ltd	ENWL					
Northern Power Grid	NPgN					
	NPgY					
UK Power Networks	LPN					
	SPN					
	EPN					
SP Energy Networks	SPD					
	SPMW					
SSE Power Distribution	SSEH					
	SSES					

Business plans are broadly accepted Some slow track will be required A lot of slow track will be required

Managing uncertainty

> New smart grid strategies must be at the heart of business plans, even if rates of uptake for low carbon technologies are unknown.

A RIIO price control covers an 8 year period. The regulator and network operators both face uncertainties during that period and in the longer term:

- The future rate of uptake of low carbon technologies is unknown
- Future economic growth or recession – which will influence conventional as well as non-conventional load growth or load churn
- Rate of ageing of assets – which determines the amount of asset replacement and maintenance
- Externalities which affect financing

RIIO expects network companies to set out how they plan to manage uncertainties, principally by using best practice to forecast volumes and costs.

For example, Ofgem insists that smart grids are part of DNO's core business plans and has mandated them to use the Transform Model®, which is designed to optimise strategies for deploying smart grids in a range of low carbon scenarios, alongside similar tools. Network companies are also expected to make robust forecasts of the health and criticality of their assets.

However, the RIIO framework does allow for some changes during the price control period, including alterations in government policy and economic conditions. Network companies can, as part of their business plans, set out which uncertainty mechanisms they are seeking to use to help them manage risk and what benefits these would bring for consumers.

Glossary

Asset Health Index	A framework for collating information on the health of network assets. It is a numeric value between 1 and 5 which represents the condition of each asset and is used to track changes in network health over time.
Business plan	A written document describing the nature of the business, its business goals, the reasons they are believed to be attainable, and the plan for reaching those goals.
Capex	Capital Expenditure: money invested by a company to acquire or upgrade fixed, physical, non-consumable long-lived assets.
CAPM	Capital Asset Pricing Model: a theoretical model that describes the relationship between risk and required return of financial securities.
CML	Customer Minutes Lost: a reliability indicator used by GB electric power utilities. It is the average customer minutes of lost electricity supply per customer per year, where an interruption of supply to customer(s) lasts for three minutes or longer, calculated as: The sum of the customer minutes lost for all restoration stages for all incidents / The total number of customers.
Critical friends panel	A critical friend can be defined as a sufficiently informed, trusted person who asks provocative questions, provides data to be examined through another lens and offers critiques of a person's work as a friend.
DNO	Distribution Network Operator: an organisation that is licensed to deliver electricity to customers on behalf of an energy retailer.
Efficiency incentive	An incentive whereby companies can keep a percentage of underspend against agreed expenditure. Companies also fund the same percentage of overspend. The remaining savings or losses are passed through to consumers.
Expert panel	A selected group of people that have extensive, recognised skill or knowledge in relevant fields.
Fast pot	Expenditure which can be partially or wholly recovered as income in the current period rather than being added to the regulated asset value and recovered over a long period.
Fast tracking	The process by which network operators can have their price control agreements established quickly.
IQI	Information Quality Incentive: a mechanism which incentivises Network Operators not to inflate their expenditure forecasts. It does this in two ways: by giving additional income to companies who forecast spend close to the Regulator's assessment; and by providing these companies with a higher incentive rate than those companies with higher totex forecasts, thereby increasing their rewards for outperformance.
IRM	Innovation Rollout Mechanism: a revenue adjustment mechanism, designed to make funding available for the roll-out of proven low carbon or environmental innovations within the price control period.
Load Index	The Load Index (LI) is a framework for collating information on the utilisation of the Distribution Assets. It is a numeric value between 1 and 5 which represents the degree of utilisation of an asset and is used for tracking changes in asset utilisation over time.
NIA	Network Innovation Allowance: a use-itor- lose-it allowance that each network company receives to fund small-scale innovative projects as part of their price control settlement, set at between 0.5 and 1 per cent of allowed revenue.
NIC	Network Innovation Competition: a single annual competition for electricity transmission and distribution that funds large-scale, innovative projects with low carbon or other environmental benefits. Companies can apply to have a maximum of 90 per cent of the project costs funded through the NIC.
Ofgem	Office of Gas and Electricity Markets: the GB Energy Regulator.
Opex	Operational Expenditure: the money a company spends on an ongoing, day-to-day basis in order to run its business.
Price control	A control developed by the regulator to set targets and allowed revenues for regulated companies.
RAV	Regulatory Asset Value. This is the value ascribed by Ofgem to the capital employed in the licensee's regulated business (the 'Regulated Asset Base').

Glossary continued

Regulated utility	A business that is subject to a deep public interest and therefore it is considered desirable for it to operate as a controlled monopoly to protect consumers, society and/or the environment.
Regulator	A body which sets and polices regulatory control measures and which seeks to influence the organisations which it regulates in order to protect consumers, society and/or the environment.
RIIO-ED1	The first Electricity Distribution Price Control under the RIIO framework.
RIIO-GD1	The first Gas Distribution Price Control under the RIIO framework.
RIIO-T1	The first Gas and Electricity Transmission Price Control under the RIIO framework.
RoRE	Return on Regulatory Equity: the return on the (notional) proportion of the regulatory asset value (RAV) that is financed by equity.
SAIDI	System Average Interruption Duration Index: a reliability indicator used by electric power utilities. It is the average outage duration for each customer served and is calculated as: sum of all customer interruption durations / total number of customers served.
SAIFI	System Average Interruption Frequency Index: a reliability indicator used by electric power utilities. It is the average number of interruptions that a customer would experience and is calculated as: total number of customer interruptions / total number of customers served.
Slow pot	Expenditure which is added to the regulated asset value and recovered over time.
Smart grid	A Smart grid is an electricity network that can intelligently integrate the actions of all the users connected to it - generators, consumers and those that do both - in order to efficiently deliver sustainable, economic and secure electricity supplies.
Stakeholder	Stakeholders are those parties that are affected by, or represent those affected by, decisions made by regulated businesses and the regulator. As well as consumers, this would for example include Government and environmental groups.
Surrogate customer	A person or body acting on behalf of a number of customers that do not have the knowledge or market power to influence the behaviour of a monopoly provider of services.
Totex	A capitalisation policy based on equalising incentives between operating and capital expenditure. In RIIO there is no difference in the way that Capex and Opex are treated. Both are expected to be financed 80% from a “slow pot” and 20% from a “fast pot”.
Transform Model®	A practical tool to optimise the investments needed to integrate smart grid technologies into existing electricity distribution networks, with the lowest possible amount of new engineering work and maximum cost-efficiency.
WACC	Weighted Average Cost of Capital: this is a weighted average of the expected cost of equity and debt financing for the network companies.