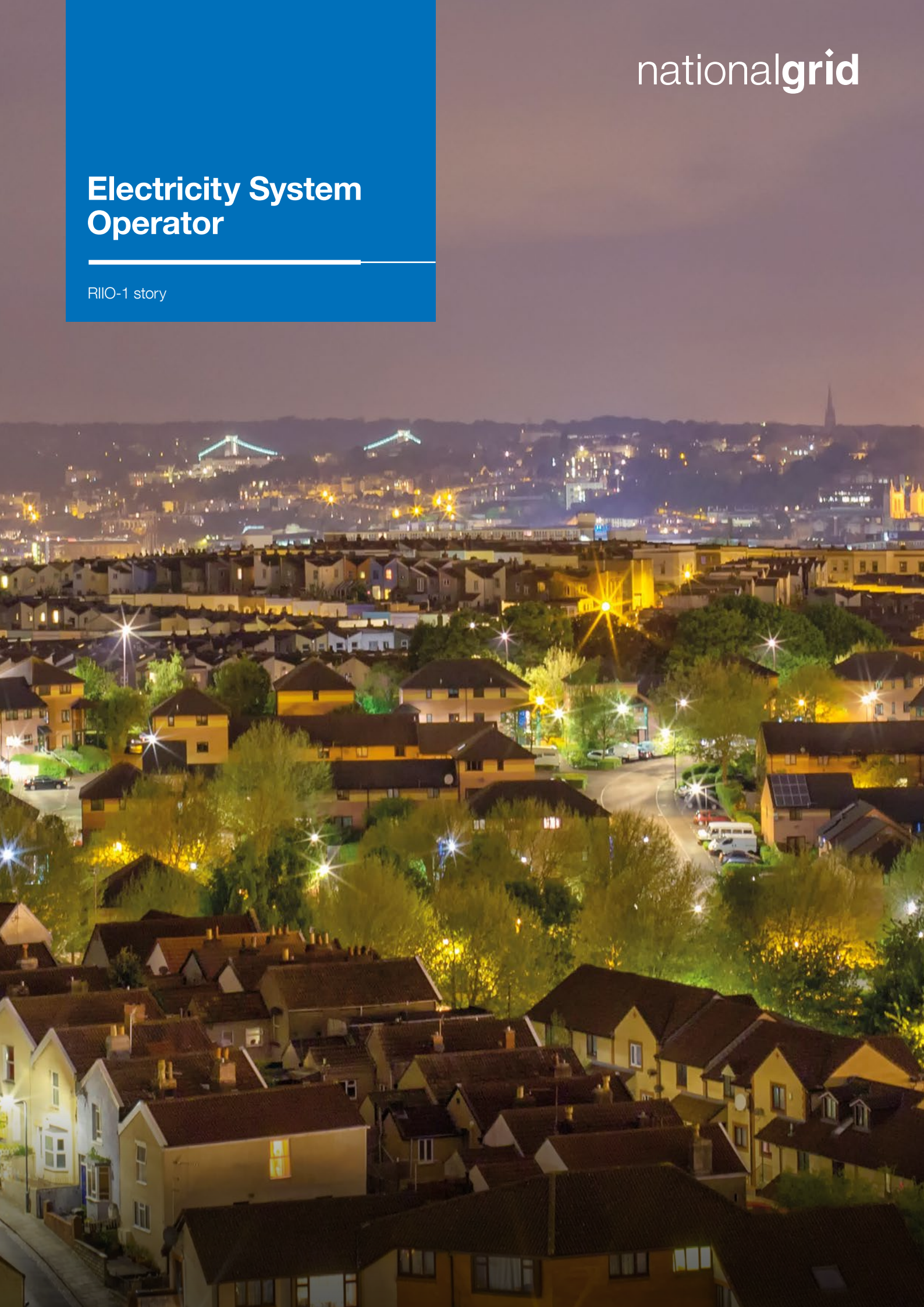


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Electricity System Operator

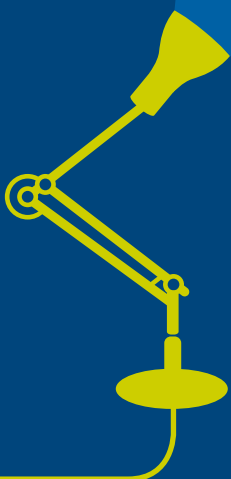
RIIO-1 story



As the Electricity System Operator (ESO), we make sure electricity supply and demand are balanced on a second-by-second basis in Great Britain.

We've worked hard to deliver for customers, service providers and consumers during the RII0-1 price control, which runs from 2013 to 2021. We outline the story so far here. We will continue to work with our customers, service providers and consumers to focus our efforts and improve our performance.

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Our RIIO-1 ambitions

At the start of RIIO-1, we outlined three main ambitions in our Detailed Plan for System Operation. Here are some of the key areas of progress:



99.9999%

Network reliability

1. Maintain security of supply and reliability of the transmission network

Our economy and way of life rely on a safe and reliable supply of electricity. As the ESO, we've helped achieve 99.9999% network reliability each year during RIIO-1, ensuring that whenever you flick a switch the lights come on.

2. Minimise constraints and maximise the outputs of renewable generation

Keeping Britain's electricity system balanced costs around £1 billion a year. These costs are managed by the ESO and passed through to consumers. We've taken steps to cut these costs and decarbonise supplies, by:

- saving consumers more than £500m through our actions under the Balancing Service Incentive Scheme (BSIS)
- successfully managing much more renewable and local generation than predicted at the start of RIIO-1
- working with the industry to connect more low-carbon energy supplies. We've made it more straightforward for new low-carbon technologies to enter the market, while minimising costs to consumers.

3. Maximise the benefits introduced by the Transmission Owner capital plans, and use of smart network assets

We're embracing new technologies and thinking innovatively to play our part in unlocking £8 billion in annual consumer savings to 2030 that smart power¹ can deliver.

Achievements include:

- Gaining support for flexible technologies through our [Power Responsive](#) programme, with 1,500 organisations signed up.

- Removed barriers for providers of flexible power. The number of balancing service providers has risen by 70% since 2011.
- Performed cost-benefit analyses of proposed transmission investment decisions to make sure consumers get value for money through our annual [Network Options Assessment](#).

Where we need to improve

Data plays a critical role in our operations. It is vital to efficiency, productivity and robust decision-making. We are building the right capabilities to manage our data better. This will help us to meet the needs of our customers and regulators. We are 18 months into a 3.5-year programme to embed the National Grid Group Data Management Principles and Minimum Standards. The aim is to ensure confidence in data, based on improved data quality and controls.

An area of particular stakeholder focus has been the Electricity Balancing System (EBS) project. The aim of the EBS project was to provide a modern replacement of legacy balancing mechanism systems to optimise our balancing processes. At the outset of the project the EBS solution was intended to be in place and operational by early 2016 but the project experienced delays and functional delivery complications. EBS is a complex IT project and we continue to work with the supplier to try to overcome the challenges faced. More recently we have agreed to move forward with a mixed solution estate which will make use of EBS and certain elements of the existing Balancing Mechanism solution whilst we develop industry standard web interfaces services to enable more flexible external access.

¹ Smart power: A National Infrastructure Commission Report <https://www.gov.uk/government/publications/smart-power-a-national-infrastructure-commission-report>

Financial highlights²

Our operating costs and the costs of balancing the electricity system are ultimately passed on to consumers in their electricity bills.

£19.4m

Amount we have underspent by, over the first four years of RIIO-1

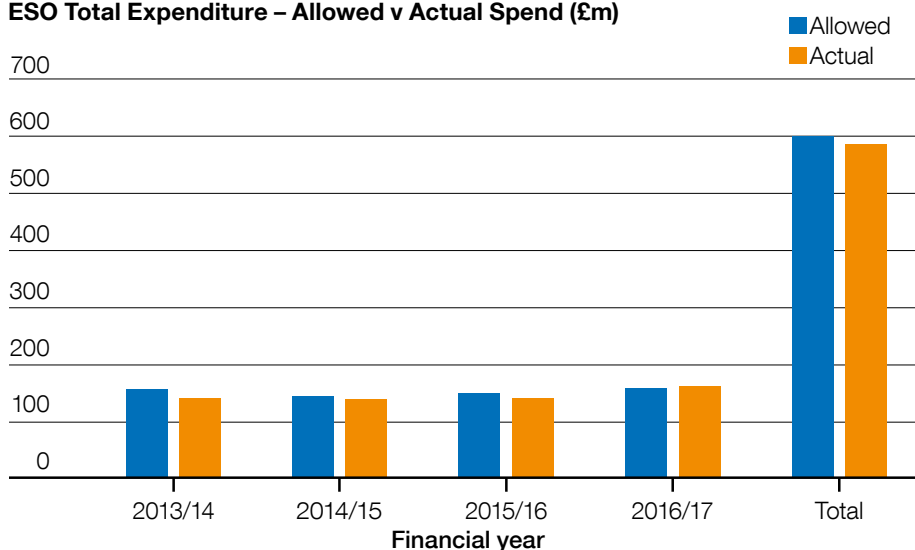
We manage these costs carefully, resulting in savings for consumers, as described below.

Allowed revenue

Ofgem sets the amount we're allowed to recover from customers to run our business, with any overspend or

underspend split roughly 50-50 between the ESO and customers, and ultimately consumers. Through being more efficient and finding a better way, we underspent by £19.4m over the first four years of RIIO-1, providing £10m savings for consumers.

ESO Total Expenditure – Allowed v Actual Spend (£m)



£513m

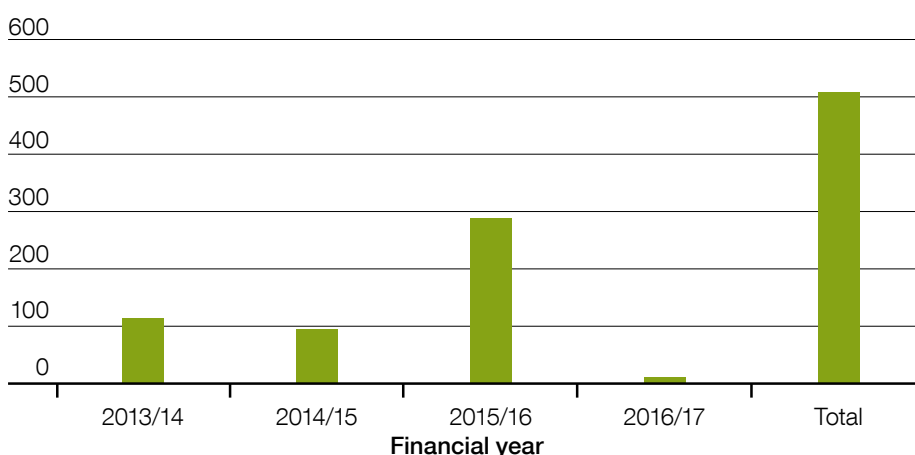
Amount we have saved consumers by reducing balancing costs

System balancing savings

From 2013–2017, we were incentivised to reduce balancing costs through the

Balancing Services Incentive Scheme (BSIS). As a result of our actions, we saved consumers £513m.

Consumer savings via BSIS (£m)



ESO Forward Plan

From now until RIIO-2 begins, Ofgem is trialling a new way of incentivising us. Each year, we'll publish a [Forward Plan](#), and our performance will determine a reward or penalty of up to ±£30m. This marks a major step forward in our transparency, and customer and

stakeholder engagement, and greater accountability to our stakeholders for our performance. It's also an important step towards [legal separation](#) from the National Grid Electricity Transmission Owner, a key enabler for the ESO in facilitating industry change.

² National Grid Electricity Transmission Performance Reports 2013/14 to 2016/17 – Talking Networks <http://www.talkingnetworkstx.com/General-Performance.aspx>

Case Studies

Case Study 1 – Customer Connections We have worked with the electricity transmission owners to improve the process for connecting new generation and demand.

300

Connection applications received in 2016/17

Key achievements

- We haven't missed our three-month connection offer deadline in the first four years of RIIO-1³.
- The number of connection applications received has more than doubled over the last four years, reflecting the number of new market entrants and technologies.

- We are working with our customers to better understand their needs and improve our processes and service.

Benefits in brief

By offering connections in good time, we make sure low-carbon generation and innovative technologies are connected to the network, bringing environmental benefits and savings for consumers.



Case Study 2 – Balancing Services Development We've done a lot of work to make balancing services more transparent and competitive.

250

Conversations with potential providers every year

We are now working with customers and stakeholders to do more, including through the ESO Forward Plan process.

- We have around 250 conversations with potential providers every year, compared with 20 at the start of RIIO-1.

Key achievements

- Our [System Needs and Product Strategy](#) consultation helped us create our Future of Balancing Services Ambition and a new product roadmap.
- The number of customers providing services jumped from 73 in April 2011 to 125 in April 2018.

Benefits in brief

By ensuring we have the right tools to efficiently and economically balance the electricity network, we save costs for customers and consumers and create opportunities for providers.



³ National Grid Electricity Transmission Performance Reports 2013/14 to 2016/17 – Talking Networks <http://www.talkingnetworkstx.com/General-Performance.aspx>

Case Studies

Case Study 3 – Balancing and Operability We're responsible for managing system balancing and operability in a fast-changing energy landscape.

Coal-free day

Britain had its first coal-free day since the Industrial Revolution in April 2017

Key achievements

- A rise in intermittent generation means we now have to take more actions to balance the system.
- We're increasingly looking across the whole system for solutions, working with partners on projects including the Regional Development Programmes (RDPs) and the Energy Networks Association (ENA) [Open Networks](#) project.

Benefits in brief

A joined-up, whole-system approach can help us improve operability and benefit everyone from network operators to end consumers.



Case Study 4 – Codes Electricity codes provide the rules for operating the transmission network. We promote competition through our administration of industry codes.

3

Codes that we administer on behalf of the GB energy industry

Key achievements

- We spearheaded a move to open code governance, which means any code signatory can propose changes.
- We implemented eight European codes, developed in collaboration with our European partners, through 30 GB code modifications.

Benefits in brief

By ensuring the codes and governance processes are fit for purpose, we make it easier for new technologies that can minimise costs and ensure operability to enter the market.



Case Studies

Case Study 5 – Customer and Stakeholder Satisfaction

When we get things right for customers, it has a positive impact on electricity consumers.

480

Organisations involved in development of Future Energy Scenarios 2017

We seek regular feedback from our customers and stakeholders, through formal (including satisfaction surveys which currently consider the ESO as part of NGET) and informal (the daily conversations we have with colleagues across the industry) mechanisms. We know that we can sometimes be frustrating to work with and are committed to addressing this.

- Undertaken a series of customer journeys and customer immersions to better understand and respond to our customers' needs.
- Engaged with thousands of customers and stakeholders on an annual basis, through our Future Energy Scenarios, Power Responsive programme and hosted industry forums.

Key achievements

- Customer and stakeholder satisfaction⁴ has been mixed and we have lots more to do. Our focus on future improvements is outlined in our Forward Plan.

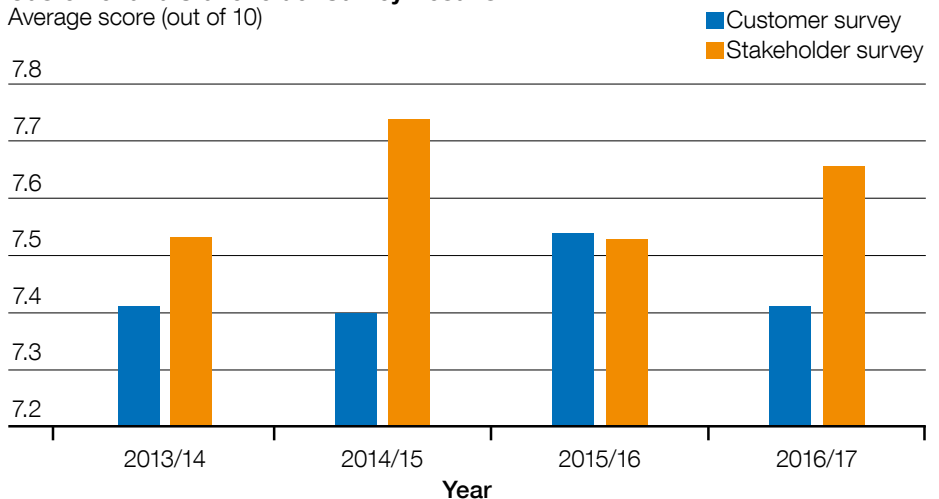
Benefits in brief

By understanding our customers better, we improve the service we provide them and provide value for money. This allows our customers to serve electricity consumers better.



Customer and Stakeholder Survey Results

Average score (out of 10)



⁴ National Grid Electricity Transmission Performance Reports 2013/14 to 2016/17 – Talking Networks <http://www.talkingnetworkstx.com/General-Performance.aspx>

An aerial night photograph of a residential town. The foreground is filled with rows of houses, many with their interior lights on, creating a warm glow. Streetlights are visible throughout the town, casting a bright, starburst effect. In the background, a larger city or town is visible, with more lights and buildings. The sky is dark, and the overall scene is illuminated by the artificial lights of the town.

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