

A summary of our RIIO-2 ambition

Energy is the lifeblood of our economy and society. Our energy system is undergoing a revolution and as the Electricity System Operator (ESO), we have a crucial role in enabling the transformation to a sustainable energy system and ensuring delivery of reliable, affordable energy for all consumers. We are a relatively small organisation, but through our actions we deliver billions of pounds of benefits to Great Britain's energy consumers.

The next regulatory price control, RIIO-2, is an unprecedented opportunity to step up to the ambitious role that our stakeholders want us to play. As a legally-separate company, trusted by our partners and stakeholders, we will facilitate competition across the energy sector to drive an efficient transformation that benefits consumers.

This document summarises *Our RIIO-2 ambition*, published in April 2019. To read the full document and find out how you can shape the ESO's direction and role, please visit our [website](#).



A summary of our RII0-2 ambition

Our ambition is to:

Deliver reliable and secure system operation to deliver energy when consumers need it

We will have an electricity system that can operate carbon free by 2025.

This means we propose to:

- Transform the operation of the electricity system so that, by 2025, it can operate carbon free.
- Refresh existing systems to balance the network as they come to end-of-life, and upgrade architecture to modern systems and capabilities that provide greater agility to react to the evolving markets.
- Make better use of the data available to us and apply artificial intelligence and automated control to transform how we balance the system.
- Develop and deploy detailed, real-time network simulation and modelling capabilities with the accuracy to unlock system optimisation options.
- Build on our innovation project on Black Start from Distributed Energy Resources Project¹ to enhance our Black Start capabilities.

Transform participation in smart and sustainable markets

We will promote competition through creating new market platforms and lowering the barriers to market participation for all players.

This means we propose to:

- Create a single, integrated platform for ESO markets. This one-stop-shop will provide a platform to participate in all our balancing service markets and the Capacity Market, and give access to both historical and forecast data to support investment cases and decision-making.
- Develop and implement a single day-ahead auction for response and reserve products.
- Develop and run a sandbox experimental market environment, alongside our established markets, to test ideas such as a system inertia market, promote new entrants and ultimately drive down costs to consumers.
- Design the markets of the future; step up to lead a review of wholesale and balancing service markets, delivering a new design by 2023, working closely with all stakeholders. Key considerations will include gate closure period, length of balancing period and the impact of large volumes of zero marginal cost generation on efficient market design.
- Transform the process to amend the codes that we manage, allowing strategic change to be prioritised and implemented efficiently, while ensuring that it is much simpler and less time consuming than it is currently to make incremental improvements.



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A summary of our RII0-2 ambition

Our ambition is to:

Unlock consumer value through competition in networks

We will drive innovation and increased participation across the energy landscape to address future system requirements.

This means we propose to:

- Embed the extensions we are making to the *Network Options Assessment (NOA)* to compare network and non-network solutions to transmission needs, enabling competition between and across technologies.
- Improve coordination across transmission and distribution network boundaries, through expanding the *NOA* approach to a wider set of transmission needs and facilitating consistency across lower voltage levels.
- Support Ofgem to establish the most cost-effective approaches to run its preferred model for onshore competition, expanding the role of the ESO where required.

Drive towards a sustainable whole energy future

We will ensure decisions are taken that optimise outcomes for consumers across transmission and distribution electricity networks. Our insights on the future energy system will recommend pathways to meet the UK's 2050 carbon reduction target through setting out actions to be taken across the electricity, gas, heat and transport sectors.

This means we propose to:

- Lead the debate on the decarbonisation of the UK energy industry, applying our long-term modelling and analysis tools, capabilities and processes to develop policy recommendations across different markets and sectors.
- Create a common portal to share network data, and develop detailed regional models to improve network modelling across system boundaries.
- Lead work to develop accessible and aligned industry codes and standards, including reviewing the Security and Quality of Supply Standard (SQSS) and Grid Code to ensure that security and technical standards are consistent across the whole electricity system.
- Incorporate whole electricity system thinking into the network design and development process. This includes extending and embedding whole electricity system approaches to operability solutions, rolling out our Regional Development Programmes and extending *System Operability Framework* pathfinders.
- Create a central information hub for parties wishing to connect to electricity networks across Great Britain, establish dedicated connection account managers for distributed energy resources, and work with Distribution Network Operators (DNOs) to take a whole electricity system view of connections.
- Modernise customer connections account management by investing in new systems to allow customers to instantly access up-to-date information about their existing connection agreements and any applications they have submitted, along with other information such as service contracts and outages.
- Strengthen outage coordination across the transmission and distribution interface, including developing a whole electricity system cost view and appropriate mechanisms to facilitate its efficient management with other network organisations².



To achieve these ambitions we must also **transform our capability for the future** through our investment in information technology, innovation and people.

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The size and scope of an ambitious ESO

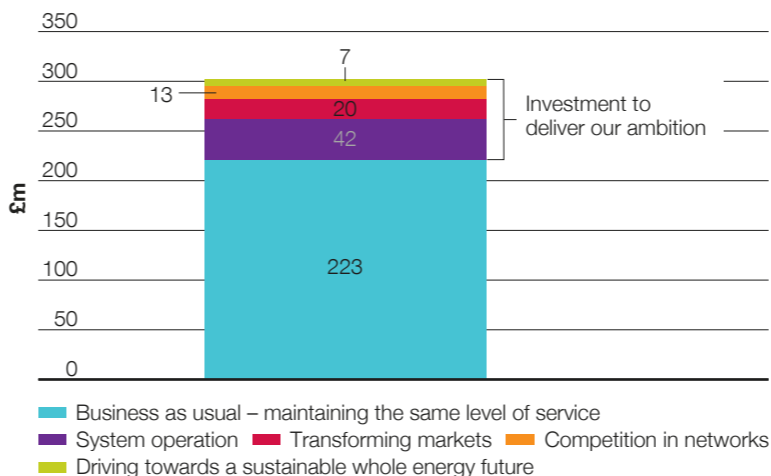
Our annual budget in RIIO-2 could increase from around £200 million today to up to £300 million. This represents less than £2 on the consumer's annual energy bill and is a small fraction of the benefits we can drive across the energy system:

- We manage around £1 billion of balancing costs every year, ensuring these are no higher than they need to be.
- The markets we facilitate today are worth over £35 billion per year³; a 1 per cent increase in efficiency across these markets would deliver £350 million of benefits to consumers.
- We estimate that our 2018/19 network development recommendations could save consumers between £1.85 billion and £2.67 billion over the next 11 years⁴.
- We are facilitating a rapid and efficient transition to a flexible, low-carbon electricity system which could save consumers £7.8 billion per year⁵.

The dramatically changing landscape has raised new challenges as operating the system becomes significantly more complex. We have managed these without additional cost to the consumer in RIIO-T1, but we must now take the opportunity to invest in our systems and capability to deliver the roles and transformational benefits that stakeholders expect from us. Information technology infrastructure will be a vital part of this ambition. Our investment will improve the way that data is used and shared across the industry, optimise decision-making through advanced analytics, forecasting and artificial intelligence, and promote competition through new market platforms. Alongside this, we will continue to protect the system from cyber threats.

Potential scope of ESO RIIO-2 costs

£m per year



A plan shaped by our stakeholders

As we embark on this unprecedented opportunity to develop a new business plan for the ESO, we need the insight and support of our customers and stakeholders. It is critical that we produce a plan that reflects stakeholders' needs and ultimately drives value for consumers. Our stakeholders have played a vital role in shaping our proposals and will continue to do so as we develop our final plan later in 2019.



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³ Market value of traded electricity for inland consumption, not including VAT and duties. *Digest of UK energy statistics*, page 33 (July 2018). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/736148/DUKES_2018.pdf

⁴ This is the suggested saving against a counterfactual where the Transmission Owners (TOs) do not build according to our recommendations. <https://www.nationalgrideso.com/insights/network-options-assessment-noa>

⁵ This benefit is achieved in a 2030 system, meeting a target of 50gCO₂/kWh. £3.2 billion to £4.7 billion of annual consumer benefits could be achieved in a 2030 system meeting a carbon emissions target of 100gCO₂/kWh. This is taken from a report for the Committee on Climate Change (*Roadmap for Flexibility Services to 2030*, May 2017) <https://www.theccc.org.uk/wp-content/uploads/2017/06/Roadmap-for-flexibility-services-to-2030-Poyry-and-Imperial-College-London.pdf>