A man and a woman are walking on a city street, both holding umbrellas. The man is on the left, wearing a blue denim jacket over a red shirt and light-colored pants. The woman is on the right, wearing a light-colored plaid jacket over a dark top and blue jeans with large holes at the knees. They are both smiling and looking towards each other. The street is wet, and there are buildings in the background. The scene is overlaid with numerous glowing purple energy lines that crisscross the frame, creating a futuristic and energetic atmosphere.

ESO R110-2 BP2 Executive Summary

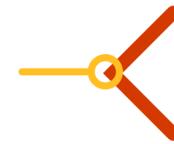
Navigation

To help you find the information you need quickly and easily we have published this report as an interactive document.

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Driving the transformation to a fully decarbonised electricity system

As the Electricity System Operator (ESO) for Great Britain, we operate one of the fastest decarbonising and most reliable electricity systems in the world. We manage the electricity system second-by-second, balancing supply and demand by shifting power across the country and identifying where investment is needed to support the energy transition. We are on track to ensure that the electricity system can support 100% zero carbon power as soon as 2025.

The need to tackle climate change and deliver net zero grows ever more pressing and the UK Government has set an ambitious new target - to achieve a fully decarbonised electricity system by 2035. This goal means that now, more than ever, we must go further and faster in pursuit of a decarbonised electricity system.

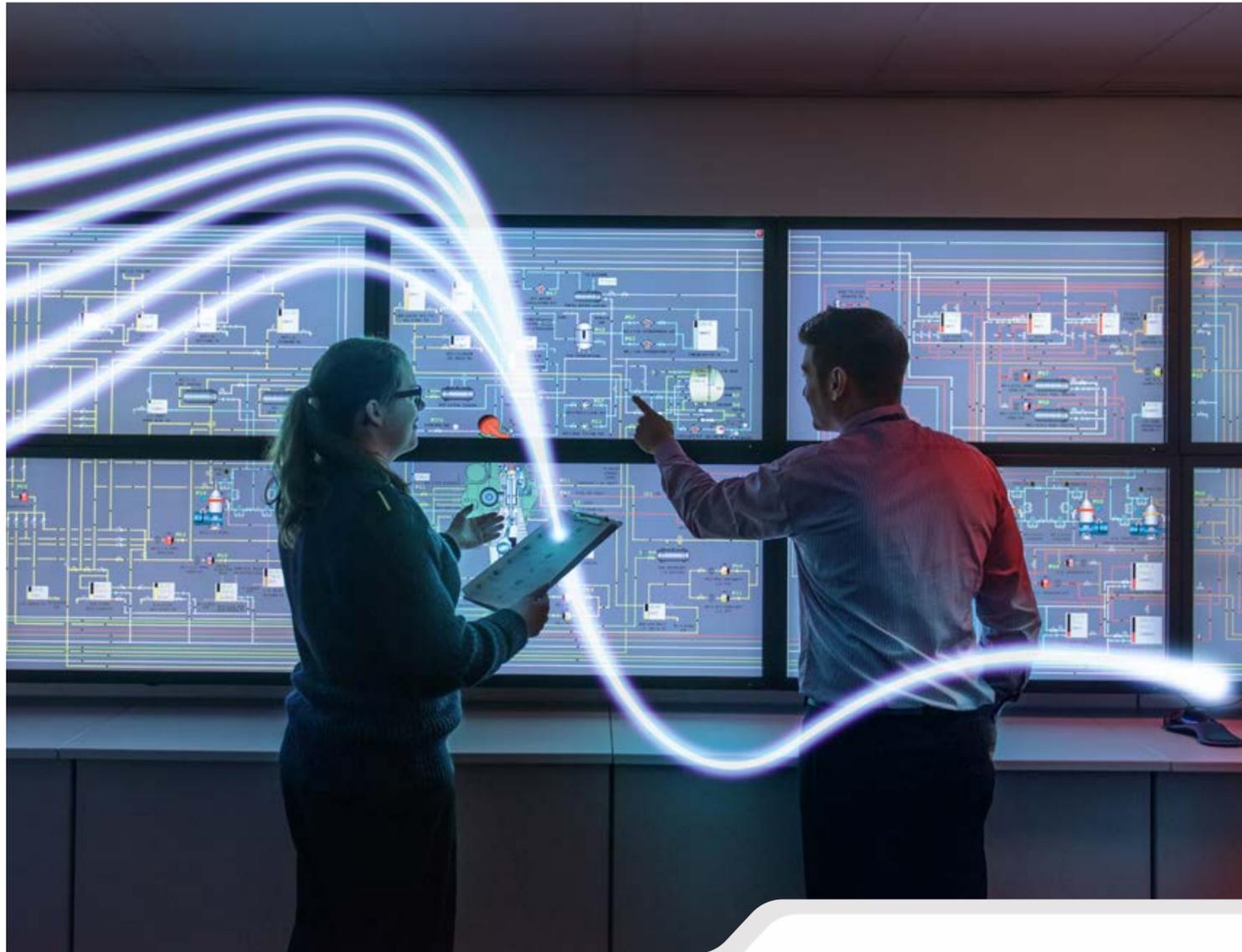
Cost of energy continues to be an important consideration in our industry and for society at large. Our Business Plan maintains a strong focus on driving cost effectiveness and efficiency into our own activities.

Many of these activities will open energy markets to low cost, low carbon generation and other new participants. This will help to decrease overall energy costs.

Our Business Plan sets out ambitious outputs that will drive the transformation to a fully decarbonised electricity system. We estimate that these proposed activities will generate benefits of around £2.6 billion for consumers over the five-year RIIO-2 period. We plan to deliver this transformation to a fully decarbonised electricity system while ensuring security of supply, now and in the future.



Our second Business Plan



We published our RIIO-2 Business Plan in 2019 setting out ambitious goals for the five-year period 2021 – 2026. To allow us to respond flexibly to the unprecedented level of change in the energy sector, this five-year period is broken down into shorter planning cycles. Our first plan, BP1, covered the period 2021 – 2023 in detail. This plan, BP2, is a full refresh and sets out detailed proposals for the years 2023 – 2025.

Our bespoke regulatory framework is designed to give us the agility to amend deliverables and take on new activities between formal planning cycles, where these are in the best interests of consumers and delivery of net zero. We have already made use of the framework to begin new activities not included in BP1.

We want our Business Plan to deliver the best value it can for our customers and consumers. Our engagement objective for BP2 remains unchanged – we are committed to working with our customers and stakeholders to help shape the future of the energy market and understand how best we can deliver this value to energy consumers. We have tested the proposals in this plan with stakeholders and we have demonstrated how feedback has shaped our proposals.

The pace of change is accelerating, and the scale is growing

In October 2021, the UK Government confirmed its ambition to fully decarbonise the electricity system by 2035. This acceleration of the decarbonisation timeline is something we are excited about and the momentum behind it, across the energy industry and beyond, is something we are proud to be a part of. This pace of change is an underlying theme to some of the proposed new and changed activities in our Business Plan.

Linked to the accelerating decarbonisation of the energy system is the rapid development and deployment of new technologies.

Low-carbon technologies, such as battery storage, wind and solar, are changing the way energy is generated and, in turn, the way we operate the electricity system. This has also led to a significant increase in the number of parties wishing to access energy markets and interact with us.

As the electricity system changes, so must the markets that support it, including the wholesale and balancing services markets.

Whole system coordination is something that is discussed alongside decarbonisation. Whole system is often referred to as the

link between transmission and distribution or the link across fuel types e.g., gas and electricity. We believe the emphasis on whole system should go much further than this. Whole system coordination means joining the gaps between energy production and consumption, putting the consumer at the heart of our thinking and addressing challenges in a joined-up way across the entire energy system. Many of the smaller energy providers, who participate in national wholesale energy and services markets, are connecting at distribution-level voltages. This requires an increased focus by us on how we engage with these smaller participants, alongside helping ensure

a smooth and successful transition of Distribution Network Operators (DNOs) to Distribution System Operators (DSOs). This, in turn, means we need to step-up cross industry collaboration and work with partners and colleagues across the sector.

The combination of a rapidly changing electricity system, a large number of new market entrants and markets operating closer to real time, has led to an exponential rise in the volume of information needed to operate and balance the system. This means we are undertaking a thorough review of the systems used in the control room and adopting a flexible and agile approach to future systems architecture.



A refreshed ESO mission and ambitions

We have refreshed our mission and ambitions statements. A key update is that our mission is now strongly aligned to the UK Government mandate to achieve a fully decarbonised power system by 2035.

Our refreshed mission is:

To drive the transformation to a fully decarbonised electricity system by 2035 which is reliable, affordable and fair for all.

Our revised set of ambition statements are now more clearly action-oriented and highlight the importance of both people and technology in achieving our mission. They provide the context for our Business Plan, with all activities now aligned to at least one of our ambitions.

Our refreshed ambitions are:



Ensuring the electricity system can operate carbon free by 2025

This ambition remains the same as in BP1. It is a clear, short-term, ambitious, achievable, and well accepted focus both internally and externally.



Driving competition for the benefit of consumers

This ambition remains the same and continues to highlight our key principle of promoting competition everywhere, for the benefit of consumers.



Engaging as a trusted partner

This externally focused ambition continues to highlight the unique position we have at the heart of our nation's energy system, recognising that many organisations must work together to meet the UK's net zero goals.



Being the net zero employer of choice

This new ambition recognises our clear dependency on having the right people in our organisation who care about net zero and have the right skills and capabilities to help us achieve that goal together.



Being innovative, digital and data driven

This new ambition recognises that innovation, data and digital technologies are a fundamental part of our core business and to achieving our future goals.

Focus for BP2

Against this background of change in the energy industry, we have a key role to play in driving the transition to net zero. Our proposed deliverables reflect stakeholder feedback and begin to address challenges needed to deliver a fully decarbonised electricity system by 2035.



Focus for BP2

Our key areas of focus are:



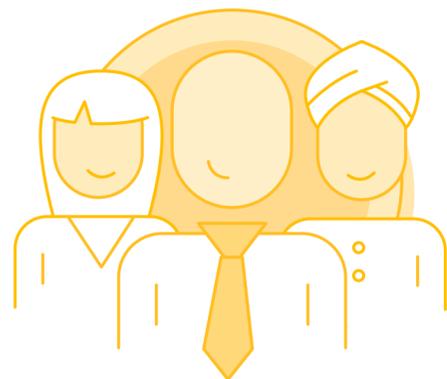
Improved engagement, transparency, and customer service:

Our customers and stakeholders are key to shaping the future of the energy system and understanding how best we can deliver value. It is also important that we are able to react quickly to changing stakeholder and consumer needs so we will continue to engage extensively on our activities and reflect the changes taking place in the industry. We believe that making the data that we hold open and accessible and enhancing the transparency of our decision-making processes will deliver significant industry and consumer benefit.

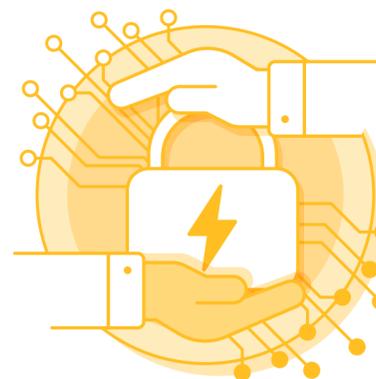


Transforming to a digital and data business:

The sheer complexity of the whole energy system in 2035, with smart appliances in homes responding to price signals, millions of Electric Vehicles and heat pumps, and thousands of decentralised assets taking part in wholesale and balancing markets, means that the digitalisation of processes and systems is vital. Increased data sharing and innovation will be needed to provide digital systems with the information needed to optimise markets and to enable timely control room decision making.



Building organisational capability and flexibility: We want to be the net zero employer of choice. People are at the heart of what we do and a skilled and engaged workforce is critical to our success. This becomes more important in the context of the pace of change within the energy industry and our role driving the energy transition.

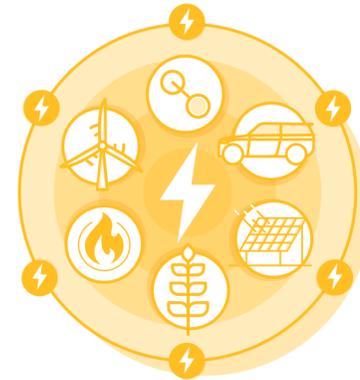


Keeping the lights on: We will continue to operate a reliable electricity network and help to ensure security of supply into the future by making it easier to connect to the system and access markets. Our proposed market reforms will provide the services we need to operate a rapidly changing system.

Focus for BP2



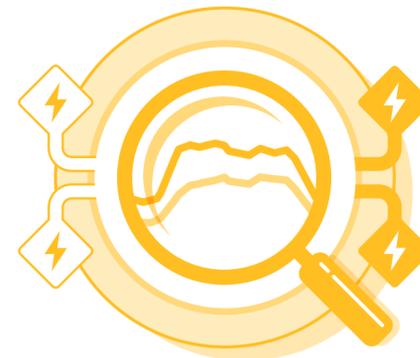
Minimising system costs: We will maintain strict control over the cost of our own operations and continue to focus on the management of balancing costs, minimising those costs we can control and ensuring that all our balancing cost actions are transparent to our stakeholders. We will maximise access to our markets and the system to increase competition and enable more low-cost, low-carbon generation to connect the system.



Whole system coordination: The expanding role of DSOs, the increasing volume of distributed energy resources and the change in mindset around whole system means that we need to think differently to deliver value and enable consumers to interact with the energy they need. We are considering how our processes, systems and operating environment, through real-time operations and longer-term planning, can support the DSO transition and the increase in distributed energy resources (DER). We are helping DSOs grow their flexibility markets, as well as removing barriers for aggregators and suppliers to facilitate DER assets in the markets. We know we need to think differently to deliver value and enable consumers to interact with the energy they need. We are using data, digitisation and innovation to do this. Projects such as the Virtual Energy System play a crucial role in this area.



Delivering the capability for zero carbon operation by 2025: We will invest to refresh the tools and systems we use to operate and balance the electricity system and allow more participants to access the system. We will deliver the new Network Control tool, which will transform the situational awareness capabilities of our Control Centre. We will also begin building our new simulation capability. This will further enhance the suite of automated and flexible training options being developed for our Control Centre.



Reform of energy, flexibility and service markets: We must continue to explore how electricity markets need to change to deliver net zero efficiently. The work we have done during BP1 shows that the current market arrangement will not deliver net zero cost effectively. Our proposals will create greater opportunities for consumers to access low-cost, low-carbon electricity by stimulating investment in new technologies and enabling greater flexibility for market participants.

Focus for BP2



Strategic planning for delivery of networks and commercial services: Many of our activities ensure that the future network remains reliable and operable in light of the changing generation and demand mix required to support net zero. To achieve this, planning and network development need to happen in sufficient time to not be a barrier to decarbonisation. This requires robust and transparent identification of the needs of the system and the triggering of solutions with enough time that they can be procured, designed and delivered.



Establishing the pathway to a fully decarbonised electricity system by 2035: The 2035 target represents a paradigm shift in the make-up and characteristics of the energy system. The scale of the challenge to get there is significant and, in the world of planning and delivering large-scale infrastructure, 2035 is just around the corner. Many activities across our plan and in the wider industry are needed to meet the 2035 challenge. We will work to make sure the right network investment is made, taking holistic regional views of electricity requirements.

Balancing capability strategic review

We continually strive to maximise consumer benefit and deliver at lower cost. Since publishing BP1 we have developed a greater understanding of the scale and complexity of some of our activities, notably the Balancing Programme. We have decided to undertake a strategic review of the existing plans, requirements and approach. Our plans must be compatible with continuing to operate the electricity system in a safe, secure and economic way, while also building the flexible capability needed in the future to help us meet potential changes in market design. Therefore, our draft Business Plan does not present plans, or narrative for the Future of Balancing or closely associated IT investments and the costs are included as a range. We began our engagement with industry with the publication of an open letter in March. Over the coming months we will be engaging further on the Future of Balancing and will present an updated proposal and costing in our August submission.

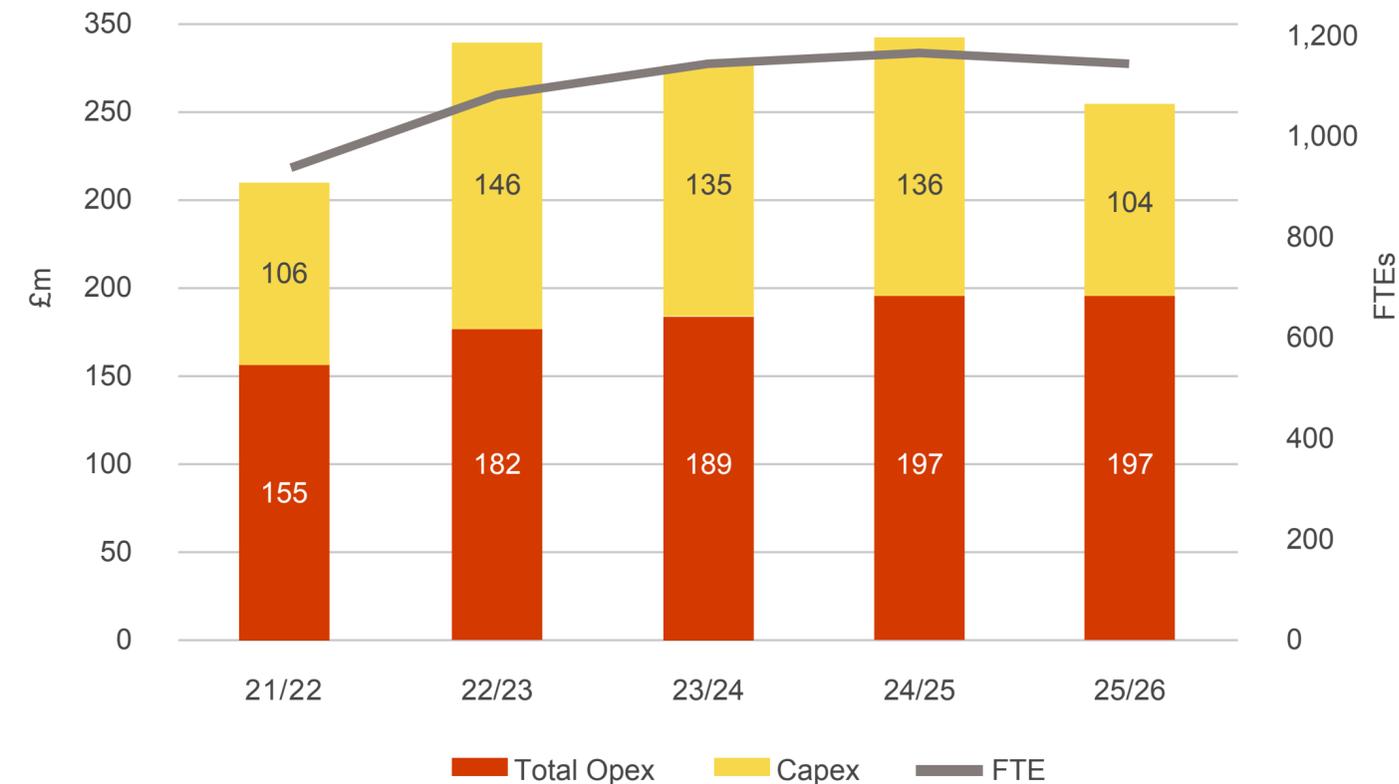


Summary financials

To tackle the challenges that we and the industry face, we need to invest in new technology and in people with the right skills and expertise. Our proposed investments are measured against the benefits they provide to consumers.

Our proposed investment in the ESO for the RIIO-2 period is an average of £309 million per year over 5 years.

Figure 1. Total opex, capex and FTE over the RIIO-2 period



The cost of our activities in RIIO-2 is around £2.10 on a consumer’s annual energy bill. Our proposed new and transformational outputs will save consumers around £5.50 per year, resulting in a net reduction of around £3.40 from the level it would have been without our actions. Our core ongoing role also delivers consumer savings that have not been quantified, so this figure is likely to be an underestimate.

The Net Present Value of the RIIO-2 activities is around £2.6 billion over the 5-year RIIO-2 period. This is an overall positive increase since our first business plan.

As part of this business planning process, we are also able to reopen some of our regulatory finance mechanisms. Assuming our roles remain the same we do not propose any changes to the calculation methodologies for annual capitalisation rate, Additional Funding levels, working capital facility or disallowance cap. However, we propose to signal to the need for future discussions on adjustments to our Additional Funding if there are changes to our activities.

A plan for a future system operator

We welcomed the announcement from BEIS and Ofgem in April 2022 to proceed with the creation of a future system operator. This organisation, which will build on the existing skills and expertise of the ESO with additional roles and responsibilities, will be key to unlocking additional value for consumers and driving towards net zero. Prior to this, and as part of our BP2 submission, Ofgem asked to see an indicative plan for the transformational activities we would have to undertake to respond to changes in our governance arrangements. The indicative plan, Appendix 5 of the BP2 submission, sets out the key ESO activities, with associated dates, timeframes and indicative costs, of transitioning to a future system operator.

It is important to note that any costs linked to the future system operator are not contained in the BP2 base case numbers and only apply to the ESO activities and costs. For the avoidance of doubt, the plan and costs do not include the likely activities and costs that will be borne by National Grid plc.

Our goal for the future system operator is a world leading organisation at the heart of Great Britain's energy system and the delivery of net zero. An organisation that ensures security of supply and resilience and provides a whole energy system view to support optimised decision-making and action in the decarbonisation of power, heat and transport. The future system operator will also leverage digital technology to engage openly and transparently across industry and society and act as a trusted partner and advisor to governments, regulators and industry, with deep engineering, data and technology expertise at its core. We are excited to submit our credible, deliverable and affordable plan to realise this goal.

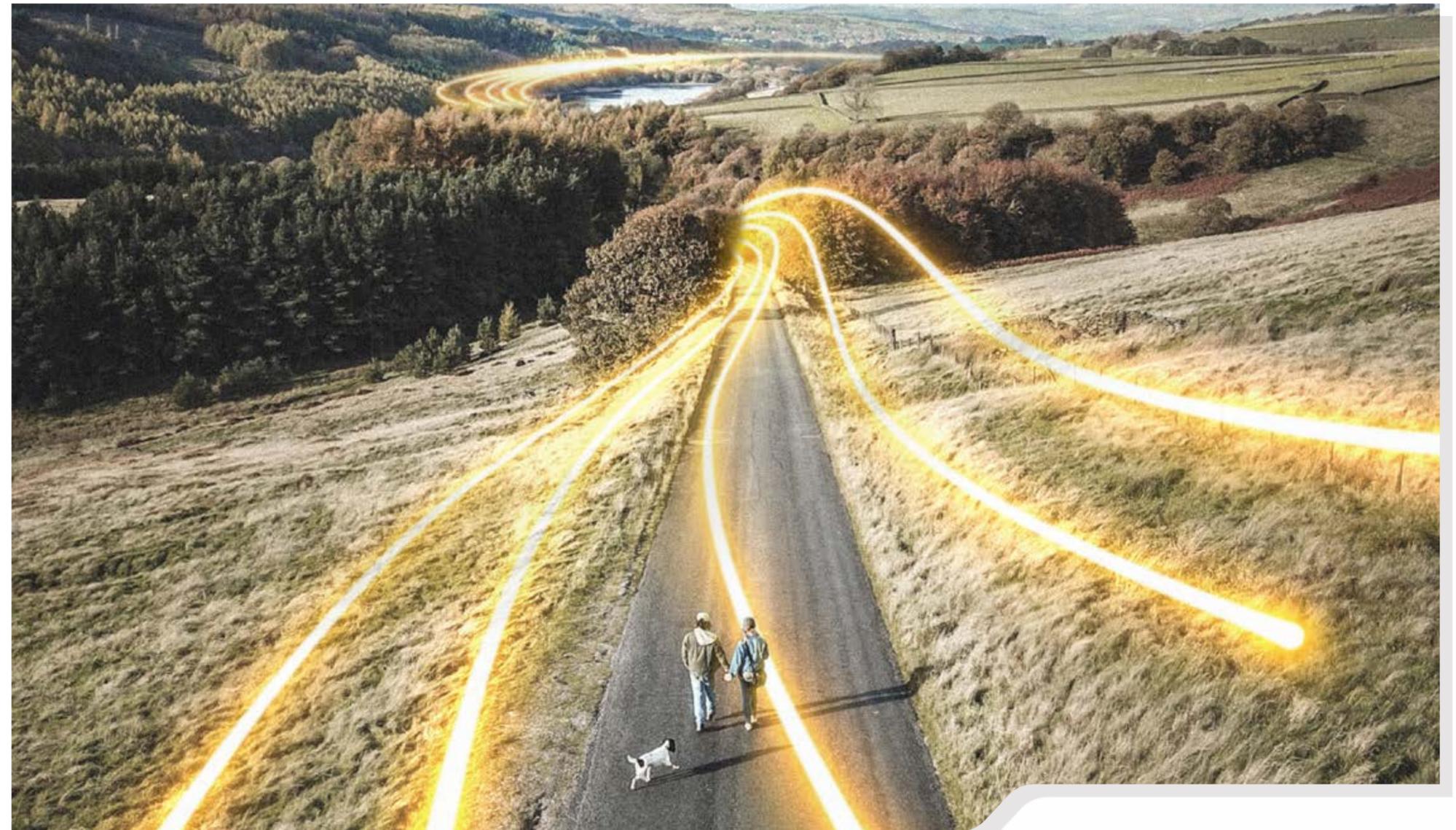


Creating an ESO for a sustainable, secure and affordable future

Since the start of RIIO-2 in April 2021, we have been evolving to meet the changing needs of the energy industry. And we are on track to make sure that the electricity system can support 100% zero carbon power as soon as 2025.

We are using the skills and expertise of our people to drive this transformation at pace. As we respond to the rapidly changing external environment our plans have evolved too. Our BP2 plan includes five new activities and twelve new sub-activities to accelerate the transition to net zero.

Our mission is to drive the transformation to a fully decarbonised electricity system by 2035 which is reliable, affordable and fair for all. We believe that the activities outlined in our plan support this mission and deliver value for customers and consumers, providing net benefits of around £2.6 billion.



Help us to further shape our plans

We've already tested our activities with stakeholders and shaped our proposals in line with the feedback. Now we want to hear your views on our draft plan. We encourage you to review, challenge us and provide your feedback as we refine our proposals, before submitting the final version of BP2 in August 2022.

Our BP2 consultation is open from 29 April until 10 June 2022. We will be running a mix of events and providing a range of ways for you to feedback across the entire plan. To get involved visit our RIIO-2 pages of the [ESO website](#).

We look forward to continuing to work with you as we deliver a sustainable, secure and affordable electricity system for the future.