

nationalgrid

**Electricity
System Operator
Forward Plan
2018/19**





Contents

1. Our vision
2. An ambitious plan
3. A changing landscape
4. Value for consumers
5. A plan built with our customers and stakeholders
6. Our roles, principles and key outcomes
7. Managing system balancing and operability
8. Facilitating competitive markets
9. Facilitating whole system outcomes
10. Facilitating competition in networks
11. Our journey to transform

1. Our vision

Our long-term vision is for an Electricity System Operator (ESO) which thinks across networks, plays a more active part in the energy system and helps to shape frameworks for markets. In our own role, we will be transparent in our decisions and actions and promote increased use of markets in place of bespoke bilateral action. Alongside this, we will also continue to run the electricity system safely, securely, sustainably and efficiently.

This approach will benefit consumers in several ways. It will enable efficient price signals to drive investments, ensure effective markets to encourage innovation and identify new approaches to meet society's changing needs. Over the next three years we will support this vision across our four roles:

- Managing system balancing and operability.
- Facilitating competitive markets.
- Facilitating whole system outcomes.
- Supporting competition in networks.

This plan sets out what we will deliver over the next year. It explains the work of the ESO and the value that we create.

Our priorities are informed by feedback from customers and stakeholders. We also study where we can innovate to prepare our system for the decarbonised and decentralised future, as well as how we can achieve cost efficiencies in the short and longer term.

We continue to focus on getting the basics right by improving data handling and our compliance procedures, as well as ambitious new deliverables.

We are doing all of this against a backdrop of changing our organisation to create a legally separate ESO, as well as the market uncertainty due to Brexit.

We will measure our success in delivering this plan by the additional value we create for consumers this year and in the longer term.

We must demonstrate that we have performed against the metrics and stretching targets that we have set for ourselves. We must also show that our stakeholders value these outputs and that they believe our performance has exceeded their expectations.

2. An ambitious plan

This year we will be establishing the ESO as a new, stand-alone business within National Grid. This document sets out our Forward Plan for the coming year and in the months ahead we will seek your views on our performance.

In this Forward Plan we set out:

- Our actions covering our four roles and seven principles.
- An ambitious plan of work that we intend to deliver in 2018/19.
- Metrics covering delivery against our core roles as well as delivery of stretching targets that drive additional value for consumers¹.
- The views and priorities of our customers and stakeholders on this plan, how we have responded to them, and how you can continue to engage throughout the year.

Who we are

We are establishing the ESO as a new, stand-alone business within National Grid. We are doing this to assure our stakeholders and customers that the System Operator undertakes its role transparently, fairly and independently of the interests of any other party in the energy sector. This includes network owners such as National Grid's transmission business.

What we do

It's our job to operate Great Britain's electricity network to ensure that:

- Supply and demand are balanced second by second and in the longer term.
- Power flows across the network safely and reliably.

To do this we:

- Deliver a range of services to our customers, the users and owners of electricity networks, for the use and operation of the GB transmission network.
- Work with established and new businesses to plan for the evolution of the electricity sector and our balancing markets and electricity networks.
- Work with stakeholders to plan the development of transmission networks and help understand the needs of the distribution network.
- Provide free and open information about our operational activities and plans.



¹ This plan is part of a new regulatory framework for the ESO. For more details, please see <https://www.ofgem.gov.uk/publications-and-updates/electricity-system-operator-regulatory-and-incentive-framework-april-2018>. The Gas SO is treated under a separate regulatory framework. Although interactions between electricity and gas will be an important consideration of our electricity strategy, the Gas SO will not be explicitly considered in this document.

Since 2010

Controllable fossil fuel generation capacity has dropped by ~20 GW and continues to fall.



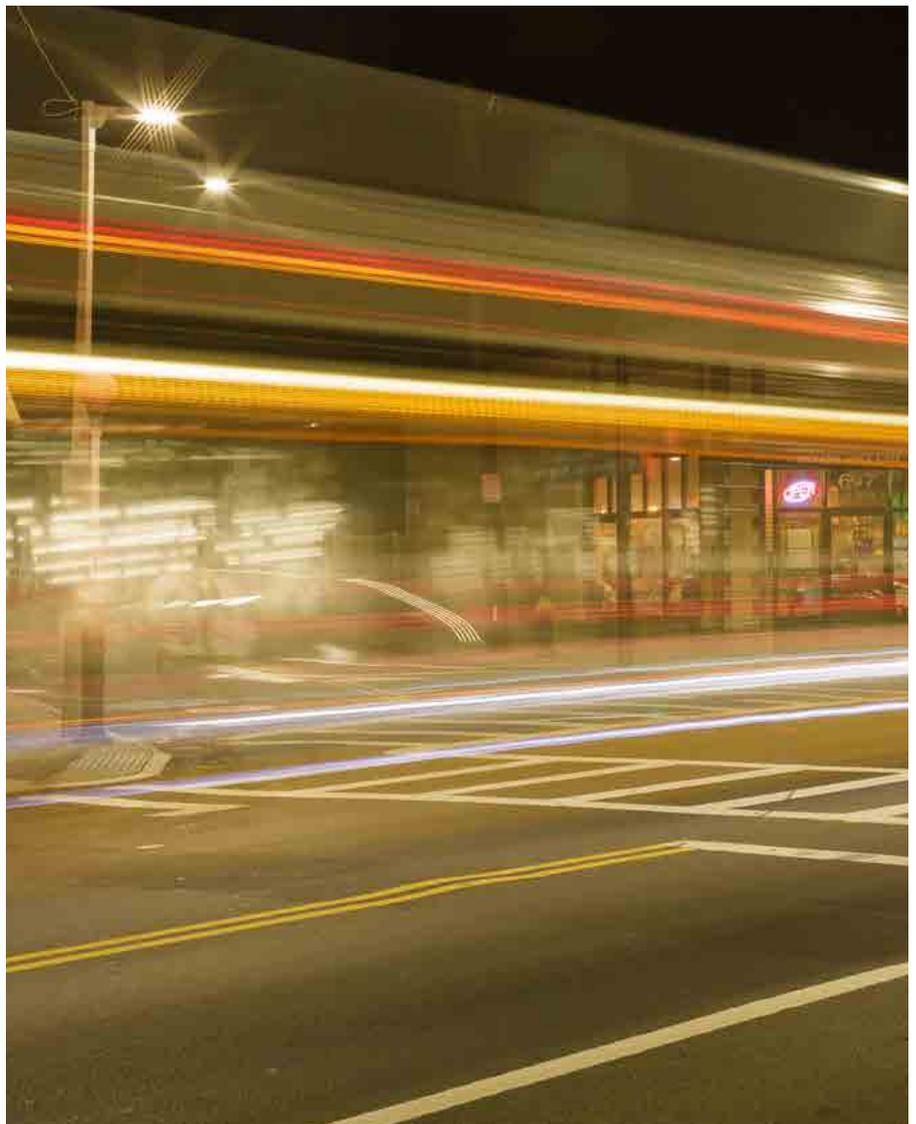
12 GW
Installed solar capacity connected to the distribution system is 12 GW; it could rise 25% by 2020.



0
British power generation saw its first coal-free day since the Industrial Revolution on 21 April 2017.



+42%
Demand for plug-in electric hybrid vehicles rose by 42% in 2016.



3. A changing landscape

Great Britain's electricity system is changing dramatically. Making the shift to a low-carbon power grid is a vital element of plans to decarbonise the economy. Our purpose is to support this transition while managing costs and maintaining reliability at high levels across GB.

We expect the rapid pace of change to increase further. Smart meters, distributed generation and smarter grids will radically alter how the power grid is used. In turn, this will determine how the grid needs to be designed and run.

In future we will work in a more integrated way across the electricity network both locally and nationally. We will also work with thousands of customers and organisations.

To succeed, we are evolving and developing all the key elements of our business: our people, our IT systems, and our standards and processes. We are making these changes today so that we are ready to meet the demands on the system in future. The aim is to ensure a stable and cost-effective transition.



4. Value for Consumers

Creating value for consumers is at the heart of everything we do. This plan sets out how we will make the improvements that deliver value.

Promoting competitive markets

We will do this through reform of markets and developing new markets. We will enable competition by removing barriers to new entrants through our work on charging and future balancing services. This will help us to operate the system in a smarter way. It will also help to establish more efficient markets that reduce costs to consumers today, and pave the way for a more affordable system in future.

We will deliver better market information and greater clarity on our actions and decisions. Better forecasting of demand, wind generation and charges will reduce risk, which in turn benefits consumers.

Improved information on our own trades to balance the system will improve the quality of decision-making in markets, leading to more efficient outcomes.

Promoting efficient network development and operations across transmission and distribution systems

Together with Distribution Network Operator (DNO) partners we will develop innovative technical and commercial solutions. This is a vital step towards using energy resources in an optimal way, wherever they are located on the system.

We will minimise network reinforcement costs by assessing new alternatives to traditional asset investment.

In the short term this means lower network costs for consumers. In the longer term there will be tools in place to make optimal decisions across the whole system. This will cover both network and non-network options, transmission and distribution. Efficiencies are passed on to consumers.

Improving the service we provide to our customers

We are doing this in several ways. These include improving our forecasting services and code administration, system access for outage management, as well as billing and connections to the transmission system. This means that our customers can meet consumers' needs and keep their own costs and services efficient.

Helping the industry and consumers value decarbonisation

We will support market participants to make informed choices about the environmental impact of the electricity they buy. We will do this by providing insights into the carbon intensity of the power they use. In the longer term, this information supports the creation of a smarter energy market where prices reflect wider environmental costs.

5. A plan built with our customers and stakeholders

We continue to listen and respond to feedback from our customers and stakeholders. This will enable us to prioritise activities that will create most value for consumers this year, and in future.

In producing our Forward Plan we have engaged with a wide range of stakeholders, receiving valuable insight.

Our Stakeholder Engagement Report summarises what we have learned during the consultation period. It also shows how we have changed our plan and reprioritised to reflect this feedback.

We are grateful for your time and engagement so far. We hope you will continue to work with us to help us deliver your priorities, and together create additional value for consumers.

We understand that we need to improve how we engage with stakeholders to better understand their needs and provide support. Over the coming months we will be reviewing our engagement approaches and channels, and gathering views on how we do this. Please take the opportunity to tell us how we can improve using any of the channels through which you engage with the ESO.

6. Our roles, principles and key outcomes

Here we provide a snapshot of our plan. More information can be found in the following pages and full details of the metrics and deliverables can be found in the Performance Metrics Definition and Delivery Schedule documents.

Principle 1: Support market participants to make informed decisions by providing user-friendly, comprehensive and accurate information

- Improve confidence in our forecasts.
- Increase transparency of ESO balancing decisions.
- Develop our information portals and events.
- Efficient management of the costs of balancing the system.

Principle 2: Drive overall efficiency and transparency in balancing, taking into account impacts of ESO actions across time horizons

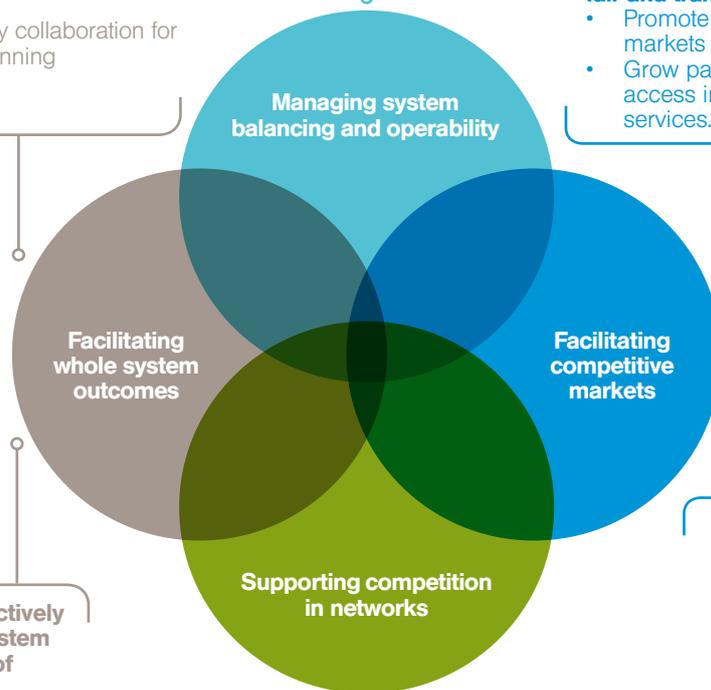
- Increase transparency of ESO balancing decisions.
- Solve operability challenges and preparing for the future.
- Develop our information events.
- Efficient management of the costs of balancing the system.

Principle 5: Coordinate across system boundaries to deliver efficient network planning and development

- Maintain and improve the quality of our insight publications.
- Improve our cross-industry collaboration for whole system network planning and development.

Principle 3: Ensure the rules and processes for procuring balancing services maximise competition where possible and are simple, fair and transparent

- Promote competition and develop new markets in balancing services.
- Grow participation and promote fair access in provision of balancing services.



Principle 6: Coordinate effectively to ensure efficient whole system operation and optimal use of resources

- Improve our cross-industry collaboration on whole system.
- Implement learning from our major innovation projects.
- Improve the service and information for new connection applications.

Principle 4: Promote competition in the wholesale and capacity markets

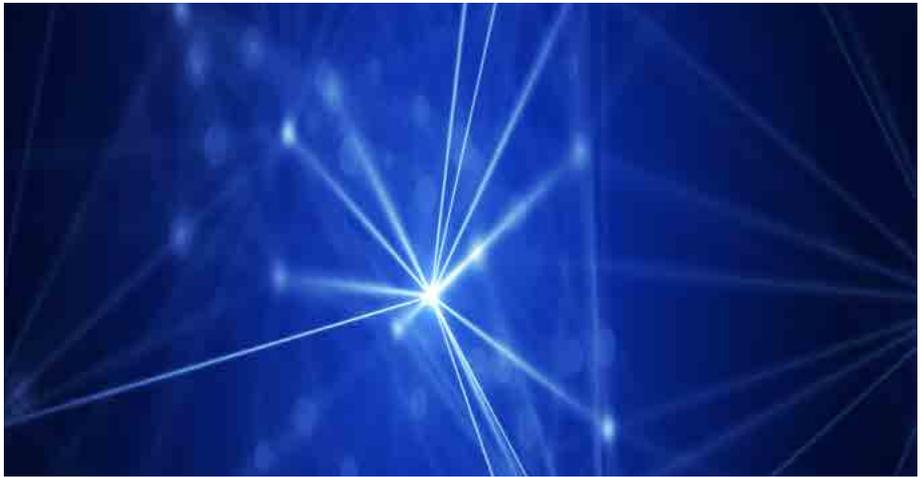
- Continual improvement of network charging processes.
- Facilitate the development of the code and charging framework.

Principle 7: Facilitate timely, efficient and competitive network investments

- Improve the Network Options Assessment models and methodologies to support ECIT.

70+ deliverables driving consumer value across seven principles.

See the Delivery Schedule and Performance Metrics Definition document for full details.



7. Managing system balancing and operability

The GB transmission system is among the most reliable in the world. Our aim is to maintain this level of reliability, at similar or lower levels of cost, as we move to a very low-carbon power grid.

To achieve this we will:

- Expand the range of information we provide on current and future markets, and on system operability. This will clarify where future opportunities exist to invest and innovate. We will also expand our information on shorter-term markets. This will help to underpin competition, liquidity and stability of these markets.
- Put in place extra measures to improve the accuracy of our forecast information on demand and renewable output. This will allow parties to better balance their short-term market positions.
- Be more transparent in explaining the procurement decisions we make when buying services through tenders, auctions or in the Balancing Mechanism.
- Continue to balance the system economically and efficiently today. We will also explore future system operability challenges and design the tools we need to balance the system effectively in future.

2018/19 deliverables and actions

Outcome	2018/19 Deliverables
Improve confidence in our forecasts	<ul style="list-style-type: none"> • Introduction of more detailed, shorter-term Balancing Services Use of System (BSUoS) forecasts. • Incremental improvements to our demand, wind and solar forecasts. • Launch of more detailed carbon intensity forecast.
Increase transparency of ESO balancing decisions	<ul style="list-style-type: none"> • Deliver a schedule of webinars and events relating to Ancillary and Balancing Services tenders. • Publication of improved Procurement Guidelines. • Promote and improve our trades data platform.
Develop our information portals and events	<ul style="list-style-type: none"> • Successful hosting of our Ops Forum events and expansion of our channels to share information to support wider engagement of market participants and service providers. • Launch new SO IT Forum with terms of reference based on feedback from customers and stakeholders.
Solve operability challenges and preparing for the future	<ul style="list-style-type: none"> • Significant upgrade of IT systems to prepare for European network codes. • Deliver new systems capability to enable participation of distributed resources within our balancing markets.
Efficient management of the costs of balancing the system	<ul style="list-style-type: none"> • New, simplified, monthly reporting and review of balancing costs with stakeholders.



8. Facilitating competitive markets

We are driving the development of competitive markets to provide the balancing services we need as System Operator. We also support competition in the energy market by playing our part as an administrator and code party. This helps to ensure that charges, codes and governance frameworks are fit for purpose.

Across these markets we aim to enable competition by minimising barriers, supporting innovation and balancing investment risks for counterparties.

To achieve this we will:

- Grow the competitive provision of balancing services. We will continue to develop new market frameworks as part of our roadmap to reduce barriers to entry. The aim is to maximise the ability for all potential providers to compete, thereby reducing costs.
- Invest in our administrative functions in code administration and network charging.
- Work with the principles of Open Governance. We will facilitate a more strategic approach to developing market governance frameworks in the UK and Europe. The goal is to promote competition and a level playing field for all.

Outcome	2018/19 Deliverables
Promote competition and develop new markets in balancing services	<ul style="list-style-type: none"> • Trial an auction platform for weekly procurement of response services. • Deliver against our Product Roadmap milestones in response, reserve and Short-Term Operating Reserve (STOR).
Grow participation and promote fair access in provision of balancing services	<ul style="list-style-type: none"> • Progress Trans-European Replacement Reserve Exchange (TERRE) and related code developments, supporting smaller parties accessing the Balancing Mechanism. • Grow the Power Responsive campaign, including annual conference.
Continual improvement of network charging processes	<ul style="list-style-type: none"> • Improved transparency and publication of charging data. • Targeted interventions on charging 'hotspots'. • New combined TNUoS and BSUoS seminar.
Facilitate the development of the code and charging framework	<ul style="list-style-type: none"> • Publish an agreed code administrator strategic improvement action plan. • Deliver the Charging Futures project plan for 2018/19.

9. Facilitating whole system outcomes

The move to a low-carbon grid means we are seeing significant growth in connections to distribution networks as well as new transmission connections. Our aim is to join up the way we design and run the network across transmission and distribution. This will ensure decisions are made efficiently across all networks, speeding up connections and reducing the investment needed in networks counterparties.



To achieve this we will:

- Expand the information we provide for longer-term scenario planning of energy use in GB. We will do this by improving our Future Energy Scenarios, Summer and Winter Outlooks, and by developing our System Operability Report.
- Improve connection timescales and reduce costs. We will achieve this by working closely with distribution and transmission network partners to begin the rollout of regional plans across GB. The aim is to ensure joined-up development and operation of transmission and distribution networks.
- Improve our cross-industry maintenance and system security planning process. This will help our network partners deliver the upgrades and routine maintenance needed, and reduce the costs of work delays.
- Work with the network industry through the ENA's Open Networks project to support the DSO transition. We will share lessons learned and outputs from our Regional Development Programmes, and work with the DNO community to shape the future industry operating model.

Outcome	2018/19 Deliverables
Maintain and improve the quality of our insight publications	<ul style="list-style-type: none"> • Publication of Network Development Roadmap and results of NOA Pathfinding projects. • Upgrade and develop our network models to better reflect Whole System, including our investment and planning-related outputs into the ENA Open Networks Project.
Improve the service and information for new connection applications	<ul style="list-style-type: none"> • Incremental improvements to our internal customer account management processes and systems. • Promote and seek feedback on our new Heat Map tools. • Improvements to the content and format of our customer seminars.
Improve our cross-industry collaboration for whole system network planning and development	<ul style="list-style-type: none"> • Collaborate with DNOs through Regional Development Plans (RDPs) to facilitate optimised connection to and use of distribution and transmission networks. • Publication of the Regional Plan as we close out our two in-flight RDPs and commence two new RDPs. • Implementation of new commercial contracts and innovative connections contracts in our in-flight RDP areas.
Improve our cross-industry collaboration on whole system	<ul style="list-style-type: none"> • Active engagement in delivering ENA Open Networks 2018 outputs including: <ul style="list-style-type: none"> • Leading the consultation process with stakeholders on future Distribution System Operator (DSO) commercial and technical arrangements. • Providing transmission input and System Operator perspective into all work. • Scoping of the new Transmission Outage and Generator Availability (TOGA) system and issue of a procurement tender for the new system.
Implement learning from our major innovation projects	<ul style="list-style-type: none"> • Implement and share learning from our major innovation Project plans. These include Power Potential, Enhanced Frequency Control Capability (EFCC), our partnership with Scottish Power's project Phoenix and our role in the new EV trial with Northern Powergrid and UKPN.

10. Facilitating competition in networks

We will work to maximise competition in delivery of network investment and build new tools allowing the market to explore alternative solutions to meet transmission system needs.

To achieve this we will:

- Implement changes to our network development processes and options analysis. This will support the needs of Ofgem's implementation of competition in transmission networks Extending Competition in Transmission (ECIT) work.
- Improve our Network Options Assessment models and tools to better reflect the changing energy system. This will also help to identify transmission system needs onshore, offshore and cross-border more effectively. It will also support expanded tools that include distribution, and non-network solutions.

Outcome	2018/19 Deliverables
Improve the Network Options Assessment models and methodologies to support Extending Competition in Transmission (ECIT)	<ul style="list-style-type: none">• Publication of the NOA Report, methodology and recommendations.• Publication of the Network Development Roadmap consultation and the final Roadmap.• Increase scope of the NOA methodology to include non-network solutions, further embed interconnector modelling, analysis of offshore networks and other enhancements.• Integrate changes in our models and methodology to include analysis of generator connections to the transmission network that are suitable for competition.• Design developments to the NOA to support the introduction of competition in delivery of the onshore transmission network.



Your feedback is essential

Ongoing engagement

We operate in a fast-changing sector. We need to maximise value for consumers by the actions we take. Our monthly, quarterly, six-month and 12-month progress reports will be shared on our webpage, along with news of events and webinars: <https://www.nationalgrid.com/uk/electricity/system-operator-incentives>

Our plan will continue to evolve. We will respond to your ongoing feedback on our performance. We welcome engagement and questions as we deliver through the year. Please email: box.soincentives.electricity@nationalgrid.com

11. Our journey to transform

Legal separation

What we want to achieve

The ESO has an important role in the transition to a more decentralised, low-carbon electricity industry model. In this Forward Plan, we demonstrate how the ESO is transforming the way it works and promoting more whole system thinking to enhance network and market access.

Our customers and stakeholders need to be confident that the ESO is performing its enhanced roles in a neutral way. To achieve this, we are creating a new ESO business that is separate from the Electricity Transmission Owner (ETO).

Data and compliance

What we want to achieve

Data plays a critical role in our operations. It supports efficiency, productivity and robust decision-making. We are building the right capabilities to manage our data better, to meet the needs of our customers and regulator.

We are 18 months into a 3.5 year programme to embed the National Grid Group Data Management Principles and Minimum Standards. This year, we will also be commissioning an external review which will result in recommendations and an action plan, that we will publish to our stakeholders.

The aim of both is to ensure confidence in data, based on improved data quality, processes and controls.

We are also strengthening Data Management as a core capability. This will allow us to use data as a key strategic asset, informing decisions and our future strategy.

People and performance

None of this is possible without our people

Our people are accountable for delivering this plan. Externally, we will begin reporting regularly on the progress we've made against the deliverables, our performance metrics, stakeholder views and the consumer value we are generating.

What we do will be transparent, highly visible and aligned to what our customers and stakeholders expect.

Strong customer and stakeholder feedback will be vital to our success. There will be structured monthly contact with stakeholders and regular conversations with customers.

