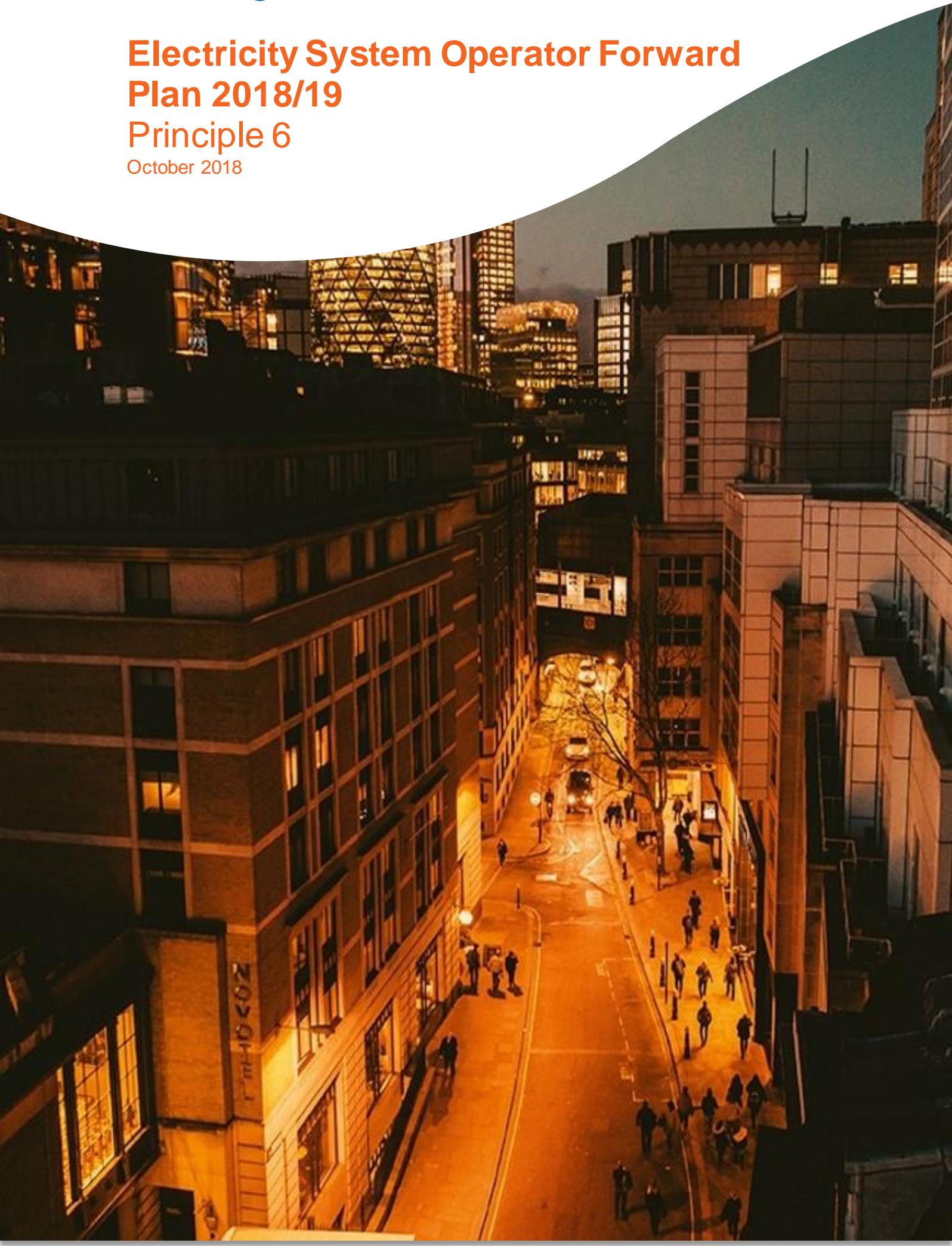


Electricity System Operator Forward Plan 2018/19

Principle 6

October 2018



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Foreword

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

The future of our energy system is digital, decentralised and decarbonised. Our approach to all the activities we are involved in, relating to the operation of the electricity transmission network needs to evolve to ensure that we engage with all network organisations and ensure the most efficient options are developed to realise value for the end consumer.

It is essential that the ESO coordinates and works effectively with other network organisations to deliver the most efficient and economic outcomes across the whole electricity system. The aim of this principle is to focus on how we develop ways of working and processes that enable the whole system operation and ensuring that we find ways to make the best use of all resources available across the system.

The objective this year is to listen and act on our customers and stakeholder's ambitions to inform a clear ambition and strategy surrounding the whole system operation and to use this to take a leadership role within Energy Networks Association (ENA) Open Networks project to design and develop ways of working. In the more near term the objective of this principle is to make a step change in the processes and flexibility around the connections and access to the Networks.

There are strong links between this principle and the RDPs in Principle 5 and the Pathfinder projects in Principle 7.

Long Term Vision

Operating the GB transmission network against the transition to a decentralised and decarbonised energy market is a huge privilege which comes with challenging responsibilities that ensure we operate a network that provides the greatest value for consumers.

Successful delivery of our operational role on a whole system basis will unlock huge benefits for consumers well in to the future. We will develop a whole system approach by working across the industry with other network operators including TOs, DNOs and an increasingly diverse range of customers.

In our role as System Operator we manage the operation of both the gas and electricity transmission systems. We will make decisions on a 'whole energy system' basis, taking into consideration developments across both energy systems to optimise our operational outcomes to the benefit of consumers.

Stakeholders have told us, they believe we should be focusing on facilitating a whole system approach and demonstrating this particularly across the interface between transmission and distribution networks.

Succeeding in this area will benefit consumers in several ways including, identification of the most economic and efficient parts the network for new connections to be made, resulting in quicker connection times and ultimately lower costs to the electricity consumer. This approach will also facilitate a faster route to connection enabling low carbon targets to be achieved quicker and enabling new revenue streams to emerge for distributed energy resources (DER).

We will have worked with DNOs to allow access to a wider range of resources and tools, whilst managing the technical challenges presented by operating the system in ways that were never anticipated when it was built. To optimise benefits to the consumer, we will have collaborated widely across industry to find creative solutions to operating challenges that traditionally would be solved through balancing actions in the Balancing Market.

The energy landscape is changing at pace and traditional distinctions between transmission and distribution networks will diminish over time. This change will benefit from a whole system perspective in the way we plan and operate the networks. We want to improve our customer's experience and ensure they have full visibility of how to access and use the networks from the time of their initial connection and throughout the operating life cycle of their assets including maintenance and refurbishment programmes. The types of customers connecting to our networks have changed, this brings a more diverse range of services and with that the levels of support provided through the connection process and the contract management phase of the connection require a change of approach. We will work with customers through the early phase of their investment to ensure the connection point offered reflects the best whole system outcome and the quality of the contract provides the ability to connect swiftly. As volumes of distributed energy resources continue to increase we will strengthen our relationships with DNOs, evolve the way we work together and support them as they transition to become Distribution System Operators(DSOs).



Julian Leslie
Head of Networks

Enabling a coordinated whole system approach to operation of the electricity system

What we do today

The energy market is changing at pace and the scale of these changes is having a significant impact on the way we engage with customers and network owners and affects how we operate the network.

The changes experienced in the energy market since the beginning of the RIIO period have required us to continually develop the way we do things, many of our baseline activities such as the connection process or outage planning work have changed significantly to meet the changing needs of new customers and the way people use the transmission network. We have continued to adapt these activities to ensure we continue to economically operate a safe and secure transmission network.

Operate a safe and secure transmission network

Operating the system to meet standards of security and quality of supply in an economic and efficient manner. We are continually changing our operating approaches and seeking new ways to adapt to the system challenges brought about by the move from strategically located synchronous thermal generation over the past decade to the network we operate today which includes over 30GW of renewable non-synchronous generation dispersed across the GB network.

Cross industry engagement

In order to inform existing and potential network users and customers of the developments in the energy industry that may affect their business or impact their approach to making a connection to the electricity networks, we deliver regular customer seminars aimed at providing insight into the development on the transmission networks and any changes to energy policy or the commercial frameworks that may affect a customer's business model.

Planning and optimising network outages

We work with all network users to develop an outage programme that allows new connections to be made to the network and to provide network access for asset replacement and maintenance requirements. Increasing volumes of new connections, many of which change their connection date throughout the lifetime of their contract with the ESO, cause a significant amount of churn in the long-term outage plan. These challenges combined with conflicting maintenance or repair outages result in a continually changing outage programme. Providing outage planning tools and engaging fully with all network users to enable viable outage plans to be created is essential to ensure we can facilitate the optimum levels of system access required for all users.

Provide operational liaison across network operators

We hold operational liaison meetings twice per year with all DNOs to share information regarding seasonal challenges faced on the transmission system and discuss approaches to coordination and collaboration across networks to resolve these challenges. This happens alongside almost daily interaction between the ESO and the DNOs to resolve short term operability issues but also to explore and discuss future requirements.

Enabling a coordinated whole system approach to operation of the electricity system

Identify future operability challenges

We currently produce the annual System Operability Framework document to provide insight to all network users and customers into the future operability challenges that we see for operating the transmission network. This is informed by the experiences we see in real time operation and the actions we take to ensure we continue operate a secure network.

Connection process

We are obligated to facilitate connections to the transmission network and through the changing nature of the energy market over the past decade we have seen a significant increase in the number of applications received. Part of our role requires us to support the connection of embedded generation in the DNO networks and we have seen significant increases in the volume of embedded generation projects.

This increase in activity began in the south of England as solar PV investments took off but this trend has also extended to other types of embedded generation connections from battery storage projects to gas reciprocating peaking generation plant.

The increase in connection applications from more diverse technologies requires us to engage with customers in a different way, many of the applications come from new providers who have little or no electricity market experience. With these applicants in particular, we have taken the opportunity to demonstrate our commitment to providing outstanding customer satisfaction by providing detailed support throughout the application and contracting process, ensuring they understand the connection processes and the codes that govern them, provide consistent account management support so they feel supported throughout and ensuring that we achieve a high contract signature rate that will ultimately lead to increased liquidity in the energy market.

How we unlock value for consumers in the way we coordinate and operate with a whole system view

Developing new products and tools to enable better decisions

In delivering our role in accordance with our license, the level of changes we have experienced in our operational work has led us to identify a need to develop new products and processes. These services have been developed to facilitate the new market that has evolved whilst ensuring we can operate economically and efficiently or to more effectively facilitate access to market as required by customers

Innovative Connection Solutions

The increasing volume of embedded generation connections in some parts of the country has identified a requirement for network investment that in some situations cannot be constructed in the required timescales or the cost of the build solution is not considered economic and efficient for the current network arrangement. In these cases, we have worked with the DNOs to develop Active Network Management (ANM) schemes to facilitate making a customer connection more quickly or efficiently. These schemes are innovative solutions that in many cases are developed to solve specific regional issues, they require extensive engagement between ESO, the DNO and suppliers to design, develop and deliver a quick solution, but this engagement is increasing knowledge across the network organisations that is now being considered more widely for other operational solutions.

In some of the more congested areas of the networks there are still external investment factors that mean the specific location is attractive to connections, we have explored alternative methods of connection in these areas by offering a flexible contract, whereby the customer can generate ahead of build solutions being constructed by restricting their output to particular timescales but allowing the customer to proceed with their planned project timescales.

We have started work on a new and innovative connection solution brought forward by a new energy storage customer requesting a connection to the England and Wales TO (NGET). This product involves the use of the tertiary winding on supergrid transformers and will provide the customer with a lower cost and quicker connection than would have otherwise been available.

In many cases supergrid transformers provide the connection point for DNOs and other customers connected to the transmission system, the use of the tertiary connection for additional customers will change the commercial arrangements for connection charges. We will adopt a collaborative approach to understanding and implementing the required changes with the DNOs.

This is a new concept and we are currently in discussion with all affected DNOs about this new type of connection. There is more commercial and regulatory development work required to be finalised before the connections are completed, but this is a great example of the ESO, the TO and the DNOs working together on a whole system basis to find new and innovative ways to facilitate new customer connections.

Increasing adoption of Appendix G approach

The "Appendix G" process started as a pilot project between the ESO and two DNOs (UKPN and WPD) the trial was developed to find a better way of providing connection offers to DNO embedded generation projects. The existing Statement of Works Process has been in place for a long time and was not designed to accommodate the volume of applications that DNOs have seen in recent years.

This new approach provides DNOs visibility of the volume of capacity available at individual Grid Supply Points up to a set limit and greater transparency enabling them to contract with embedded customers more quickly without individual applications to the ESO. This new approach informs the 'Statement of Works' that define Transmission network reinforcements required. This approach also saves the connecting customer £10k to £15k and can remove as much as 9 months from the connection offer process.

How we unlock value for consumers in the way we coordinate and operate with a whole system view

We have trialled changes to this process to better process the large volumes of embedded generation that is wishing to connect and intend to engage with all DNOs to roll out this approach across the whole network.

Whole Electricity System Outcomes

At the beginning of this forward plan performance year, we identified a need to define and articulate what 'whole electricity system' meant to us. This has led to the publication of our 'Whole Electricity System Outcomes' paper which describes how the ESO is changing to meet the challenges of decarbonisation, decentralisation, digitisation and democratisation. This includes the key areas that we believe need to be considered to deliver successful whole system outcomes that maximise consumer value. We have followed this up with a blog on the ESO website that was published in October.

Increased Industry Collaboration (Open Networks)

We play a key role in the ENA open networks project, and are actively involved in all its workstreams and the majority of its 2018 deliverables. We also lead on significant topics and earlier this year we led the development and publication of the ENA Open Networks Future Worlds consultation; the results of which will be published later in the year. We will continue to support this project and identify areas for the ESO to take a lead on. Across the ENA Open Networks workstreams the ESO is engaged in over 30 working groups and/ or product development groups.

Summary of 2018/19 deliverables to support our aims under Principle 6.

Outcome	2018/19 Deliverables
Increase and improve our engagement activity across network users	<ul style="list-style-type: none"> • Regular engagement with DNOs exists currently to share seasonal data and challenges encountered on networks. We will increase the volume of this engagement and include other network operators as well as large demand customers. • Build strong relationships with DNOs and review and develop contractual arrangements and processes to deliver efficient whole system focused outcomes. • Identify and develop new market tools with all relevant parties to ensure efficient system solutions for operation • Demonstrate system operability related challenges to a broader range of stakeholders identifying the scale of the impact we forecast on future operation and providing opportunity for whole system solutions to be developed. • Design and develop replacement TOGA system working with all users to ensure solution meets requirements of all system interfaces. • Increasing our involvement and support of the Open Networks Project • Lead the delivery of the Open Networks Future Worlds consultation, laying the framework of options for future industry structure • Articulating our thought leadership on Whole Electricity System across a broad stakeholder base
Enhanced Asset Optimisation	<ul style="list-style-type: none"> • Engage with TOs and DNOs to identify opportunities to achieve more efficient use of existing assets, making use of weather and loading related operational capabilities thereby reducing the need for investment and lowering the volume and cost of balancing actions taken.
Cross TO system performance enhancements	<ul style="list-style-type: none"> • Identify areas for process improvement under existing contracts between SO and TOs and lead change programmes to optimise consumer benefits.
Improved service and information to network users	<ul style="list-style-type: none"> • Deliver additional value to annual network customer connection seminars by creating a Whole System focus to these events, raising profile of issues experienced by users and identifying opportunities for new solutions across networks.

Performance Metrics

We will be able to demonstrate our contribution to the realisation of consumer benefit through improvements in the following metrics:

Network Access:

This ensures we are maximising access to the system through planning to set timescales

Updating Customer Agreements:

This creates the most accurate picture of the network as soon as possible after changes are made ensuring that planning and operational actions taken are based on the most up to date and accurately configured network. This minimises the chance of inefficient operation.

Future GB electricity system security planning:

Carrying out stakeholder engagement on the quality of the system operability report and the benefits it provides by giving the market visibility of current state of the network, a review of past performance and issues experienced and a future forecast, operating plan and identification of future system needs.

Right First Time Connection offers:

Ensuring Connection offers sent to customers are 100% correct ensures that the customer receives a good standard of service from the connection offer process, it minimises re-work and facilitates timely and efficient connection to the network.

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