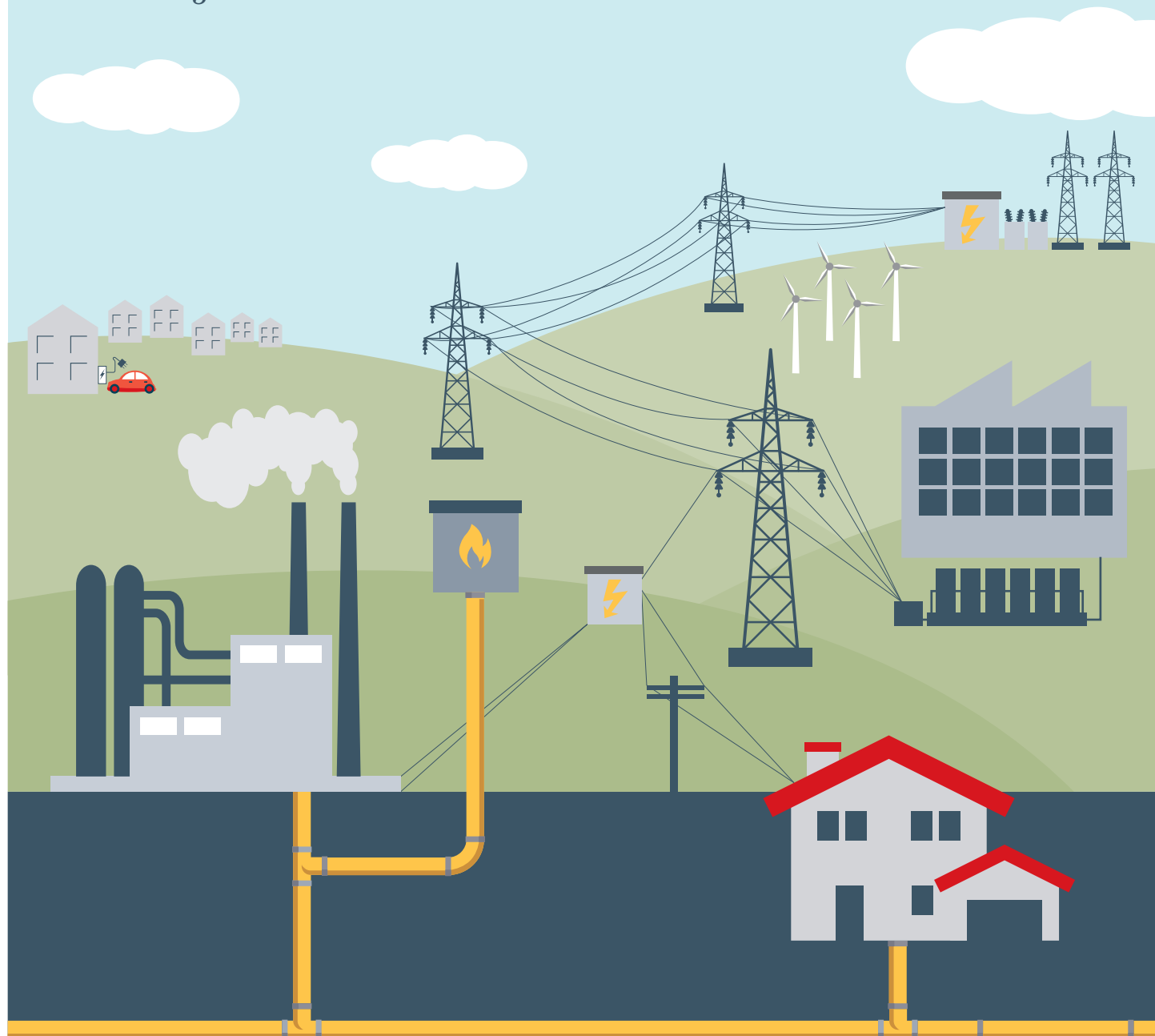


# Network research paper

Issue 3 Future networks - RIIIO-ED2

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CORNWALL INSIGHT  
CREATING CLARITY

## About the authors

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# About the Authors



## Lead author

Complete Strategy works in partnership with regulated companies to develop and deliver regulatory change and compelling strategies. The team takes pride in providing practical strategic and regulatory advice and often works alongside client teams, supplementing their own capabilities. Complete Strategy is a network of experienced consultants with a track record of providing the highest quality advice for its clients. The team has worked with and for economic regulators, government departments, regulated companies and investors. The team has direct experience of over 20 different price control reviews, spanning energy, water and telecommunications.



## Supporting author

Shakespeare Martineau have an enterprising spirit and clear ambition to do things differently. For the company it's all about mindset. It's a way of thinking and behaving that fits not only with its vision but also its clients. It's about collaborative working and a partnership ethos. Shakespeare Martineau is intent on shaking up its profession for the better, building something different...for its clients and people. It recognises that the world is changing, and law firms need to catch up, that's why it is heavily investing in ensuring its client experience is the best it can be.



## Supporting author

Cornwall Insight is the pre-eminent provider of research, analysis, consulting and training to businesses and stakeholders engaged in the GB, Irish and Australian energy markets. Our independent experts focus on regulatory, policy, and commercial issues. The Cornwall Insight team leverages a powerful combination of analytical capability, practical understanding of how the markets function, and a detailed appreciation of industry codes, procurement models and policy frameworks. We deliver insight to our customers through:

- Publications – Covering the full breadth of the GB energy industry our reports and publications help our customers keep pace with the fast moving, complex and multi-faceted markets by collating all the “must-know” developments and breaking-down complex topics
- Market research and insight – Providing comprehensive appraisals of the energy landscape helping customers track, understand and respond to industry developments; effectively budget for fluctuating costs and charges; and understand the best routes to market for power and flexibility services
- Training, events and forums – From new starters to industry veterans, our training courses equip teams with the right knowledge and skills to support business growth ambitions
- Consultancy – Energy market knowledge and expertise utilised to provide deep insight to help develop business strategies and prove they are viable

# Introduction

This is the third research paper in a series exploring the evolution of regional flexibility markets and how they can support the development of an efficient, low carbon energy system. Entitled “Future Networks”, the series is being jointly prepared by Cornwall Insight, Complete Strategy and Shakespeare Martineau. This paper has been led by Complete Strategy and investigates the interaction of regional flexibility markets with network company price controls.

## The DSO challenge

The transition from Distribution Network Operator (DNO) to Distribution System Operator (DSO), where electricity is actively managed at a distribution level, presents a new set of challenges for Ofgem. These challenges will come to a head in the next electricity distribution price control, ED2. ED2 will need to encourage continued progress in this area.

It appears that Ofgem are leaning toward an incremental change approach, led by companies and stakeholder engagement, rather than a radical change.

Companies will need to demonstrate strong progress towards a DSO model to avoid an intervention from Ofgem or BEIS.

This discussion paper builds on the previous issues of the Future Networks Series, which introduced the wider context and discussed flexibility markets

## Partner point of view

### Shakespeare Martineau



Competition both in respect of network services and network development will be key to achieving the transition to a net zero carbon future for the energy sector. Given the scale of change required and the need to ensure that costs remain manageable, competition will be essential to drive innovation and efficiency. Our next paper in this series will address such issues.

### Cornwall Insight



Work on the RIIO-ED2 price controls comes at a crucial time for the development of regional flexibility markets. If implemented well, developments to the existing price control structures could enable those markets to flourish providing greater optionality to network companies in developing their networks. But there is also the risk of poor long-term outcomes if decisions made now constrain future opportunities. The network companies and Ofgem have a fine balance to tread to balance maintaining highly reliable networks while minimizing costs in the interests of end consumers.

In order for regional flexibility markets to develop, it is important that the perspective of flexibility providers is given suitable attention within the debate. One of the key challenges witnessed in the maturing flexibility tenders being run by DNOs is suitable engagement by flexibility providers in some areas, and providers understanding the requirements of the tender. It is essential to support a broad group of users, from aggregated domestic flexibility through to grid-scale storage, in identifying, understanding and most importantly realising the value in providing flexibility to the network companies. Ultimately, harnessing that flexibility from a wide user base will be in the interest of all consumers and the network companies themselves.

## RIO-ED2

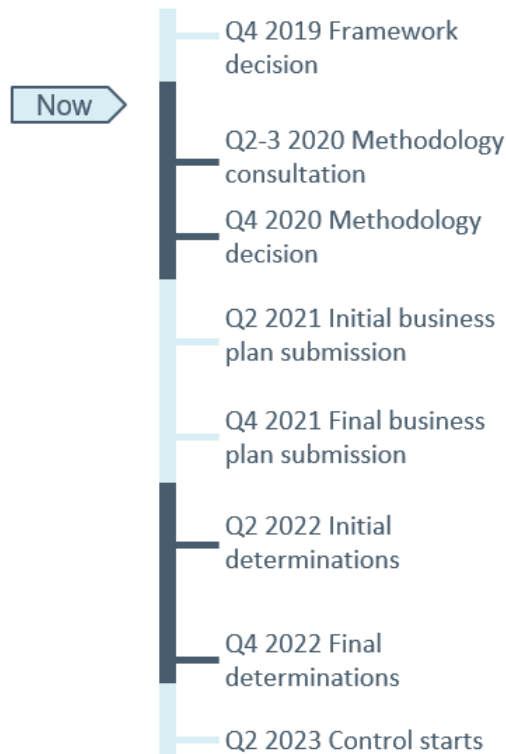
Ofgem are developing the policy framework for the next price control for electricity Distribution Network Operators, RIO-ED2 under the RIO (Revenue = Incentives + Innovation + Outputs) framework. The new price control will be an evolution of the arrangements that are running from 2015 to 2023.

The electricity distribution operators now face a different world. The energy transition will continue to accelerate, reliability remains in the spotlight and delivering these needs to be carefully balanced with affordability. At the same time, Ofgem's expectations for the level of evidence and stakeholder engagement companies will use to back up their business plans is higher than ever.

COVID-19 comes at a crucial time in this process, putting additional strain on companies and the regulator, as they rightly consider re prioritising work and adjusting to new ways of working.

## Scope of the DSO

The move from passive to active management of networks at distribution level is part of a broader shift of roles in the energy sector. It includes changes to both the traditional view of DNO roles and the role of other parties<sup>1</sup>:



Source: Ofgem



Source: Complete Strategy

The previous paper in the Future Networks series, [Issue 2 Future networks - flexibility platforms](#), covers these roles in more depth.

While many of these functions currently sit with network companies, there is potential that at some point these could be split out into other organisations or made subject to competition.

<sup>1</sup> The DSO is an evolving concept and so different organisations will take their own views of its scope, which may not exactly match our view.

## Network companies as Distribution System Operators

Network companies have begun to transition towards becoming DSOs, for example:

### Active Network Management (ANM)

ANM focuses on the active management of load and generation, enabled by monitoring, control systems and software.

For example, UK Power Networks has invested £15mn in intelligent software for its control room. It provides a complete view of what is happening on the network at any given time and can optimise the flow of available power.

### Flexibility markets

All Distribution Network Operators (DNOs) and one Independent DNO (IDNO) have made a commitment to the development of flexibility markets, as well as tools to support participants (e.g. WPD and ENW publish 'flexibility maps' showing where upcoming flexibility tenders will take place).

The first paper in our future networks series, [Future networks - setting the scene](#), contains more detail on developments.

### TSO/DSO interface

Networks have begun to coordinate DSO activities with transmission-level system operation. This involves sharing information to ensure that the actions of one party are not undermining the balancing actions of the other.

This could eventually be a route to identifying the best 'whole system' solution to challenges.

These developments have been delivered via a number of innovation projects, for example successful projects in the 2020 NIC<sup>2</sup> competition included:

- UKPN's Constellation project: trialling 'distributed intelligence' to increase autonomy and resilience for existing and future DNO substations.
- NPG's Flexr system, which translates data from the DNOs' systems and processes into one common language, to help enable open data sharing.
- SPD's Reheat, which aims to give electric heating systems the ability to shift and smooth peak demand using an interface between the DNO and in-home control systems.

The industry is also collaborating to support the transition to DSO through the Open Networks project, with a specific DSO workstream. This aims to develop an industry-wide plan for the key actions and decisions to enable the development and implementation of the pathway to DSO. Additionally, the Open Networks project is exploring flexibility services, whole system planning, a data exchange and whole energy systems.

## Ofgem policy on the DSO

Ofgem wants the DNOs to make significant progress towards the DSO transition, whilst keeping options open for wider institutional change in the future.

The regulator also seeks to avoid premature decisions on who might be best-placed to discharge DSO functions. Ofgem believes that a number of different parties could play a role in delivering DSO services.

A crucial question, is which elements of the DSO function sit with monopoly networks, and which can (or should) be open to competition?

This is more than an academic question. It poses a fundamental challenge for the new price control: how can the price control methodology encourage Distribution Network Owners to develop their own smart capabilities, innovate and support entrants offering new services, without closing off some areas to competition or creating an incentive for networks to hold back progress?

For now, Ofgem have indicated they will include a re-opener in RIIO-ED2, which may include reassignment of some cost allowances or outputs to parties other than the Distribution Network.

### Ofgem's four strategic outcomes

1. Clear boundaries and effective conflict mitigation between monopolies and markets.
2. Effective competition for balancing and ancillary services, and other markets.
3. Neutral tendering of network management and reinforcement requirements, with a level playing field between traditional and alternative solutions.
4. Strongly embedded whole electricity system outcomes.



A crucial question is which elements of the DSO function sit with monopoly networks, and which can be open to competition.

## Ofgem's Challenges for ED2

Ofgem face a number of challenges to incorporate the DSO transition into ED2, which are in tension with one another:

### Unclear end goal

There is no firm view of the 'end goal' for what a fully operating DSO will look like. This makes it difficult to set any long-term arrangements for the five year price control without presupposing a particular model of the future.

One solution would be to introduce a re-opener for DSO related activities, which could be used when the direction of travel becomes clear. But, to date, there has been mixed experience of using regulatory re-openers. Companies often find that regulators do not share their enthusiasm for using re-opener mechanisms.

### Unclear route to the end goal

Companies should be free to pursue new and efficient ideas for ways to drive forward the DSO transition. ED2 shouldn't prejudice in favour of particular solutions or approaches.

In addition to the unclear end goal, there are a range of potential routes to reach the future state.

This would lead more toward a financial incentive, rewarding achievement of DSO related outcomes regardless of implementation approach.

### Avoiding stifling competition

Network companies shouldn't have a built-in advantage over other companies that could provide contestable elements of the DSO because of price control arrangements. At the same time, they shouldn't face a disadvantage.

### Maintaining momentum

The progress companies are already making toward DSO transition shouldn't be stymied by the ED2 framework. This might happen if the regulator disallowed particular costs or created uncertainty about how and whether costs would be funded.

Workstream 3 of the Open Networks project looks to create a more defined roadmap for a 'least regrets' DSO pathway. This will reduce some of the questions around unclear end goals and routes, but won't be enough to build a solid investment plan.

## Future models for regulation

There is a spectrum of options that Ofgem could use in relation to the DSO transition:

Approach	What is it?	Pros	Cons
Directive	Ofgem or BEIS determine a direction of travel, potentially including some element market restructuring e.g. taking roles away from DNOs.	<ul style="list-style-type: none"> <li>• Drives faster progress</li> <li>• Reduces uncertainty</li> </ul>	<ul style="list-style-type: none"> <li>• Relies on 'picking winners'</li> <li>• Could miss opportunities from allowing the market to develop new ideas</li> </ul>
Guided	Ofgem or BEIS determine principles for the transition. Then keep an eye on what is happening, and step in when they need to (e.g. to grant additional funding or to intervene to stop something).	<ul style="list-style-type: none"> <li>• Drives faster progress</li> <li>• Creates opportunity to support third parties</li> </ul>	<ul style="list-style-type: none"> <li>• Creates regulatory risk (e.g. shutting down something already invested in)</li> </ul>
Stakeholder	DNOs required to use ongoing engagement to determine the course, aligning with customer needs. Ofgem monitor the engagement process and rewards through business plan incentives or licence obligations.	<ul style="list-style-type: none"> <li>• Maintains flexibility of different end states</li> <li>• Brings in a range of voices and ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on high quality and unbiased engagement programme</li> </ul>
Company	DNOs left to determine the most appropriate initiatives to pursue. Ofgem can intervene through business planning process and then leave companies to deliver this until ED3.	<ul style="list-style-type: none"> <li>• Maintains flexibility of different end states</li> <li>• Avoids 'picking winners'</li> </ul>	<ul style="list-style-type: none"> <li>• Companies may hold back to protect their existing investments and role in the market</li> </ul>

Source: Complete Strategy

Ofgem's current proposals for ED2 suggests a move to a 'default' option which relies on incremental change through **company** and **stakeholder** led progress, rewarding progress through a business plan incentive for ambitious proposals, or a flexible financial incentive, perhaps based on annual reporting or discretionary judgement rather than something fixed and mechanistic.

Nevertheless, Ofgem is leaving space open for a more **directive** or **guidance** models in the future, with the re-opener proposed for ED2 (and already included in other sectors as the coordinated adjustment mechanism).



## Implications for network companies

The central challenge for DNOs in relation to the DSO in ED2 is to demonstrate that company and stakeholder led transition to a DSO model will deliver an appropriate level of progress and customer benefit, to avoid Ofgem or BEIS triggering an intervention.

This should involve:

- **Recognising the need for new capabilities.** As distribution networks become more active, DNOs will increasingly need to act as a hub for network data and information. This will require the development of new capabilities (technology and skills). DNOs face the near-impossible task of predicting in advance what these new capabilities will look like, and when they will be needed.
- **Making business plan proposals that are flexible to different future views of the DSO.** It will be tempting for DNOs to base their plans on a view of the future that they expect. For example, networks might be inclined to assume that they will end up taking on the bulk of DSO functions). Instead, business plans should include space for other parties to take part, where this is in customer interests.
- **Including ongoing stakeholder engagement.** The transition toward DSO means that networks will need to interact with a broader range of stakeholders, including providers of distribution connected generation, aggregators and demand side response providers. DNOs will need to demonstrate that they have a high-quality engagement programme to drive business plans and in-period initiatives, and that they are actively responding to their needs.



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