

Guidance

ESO Roles and Principles Guidance

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The Electricity System Operator (ESO) has a key role in our energy system. We regulate the ESO to help ensure the actions it takes align with the interests of consumers. The ESO became a legally separate entity within National Grid plc from April 2019. The ESO's Regulatory and Incentives Framework, introduced in April 2018, is key to achieving the aims of legal separation. It aims to create transparency around the ESO's performance and make the ESO more clearly accountable to its stakeholders.

This guidance document provides further explanation of the ESO's roles and the associated behaviours, which underpin the ESO's regulatory framework. The purpose is to help to align expectations between the ESO, Ofgem and stakeholders, support the enforceability of the ESO's obligations and create a more transparent framework overall. Under the ESO's incentives framework, the ESO must also provide evidence of how it has performed in relation to the roles/activities.

This guidance document (version 4.0) builds on the previous guidance document (version 3.0). **The ESO roles and principles guidance (version 4.0) will come into effect on the 1 April 2020 and will apply from 1 April 2020 until stated otherwise.**

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Version history

We published this guidance initially in July 2017 and incorporated changes to role one before publishing again in December 2017. We have since made a number of small changes in this iteration. The table below summarises the changes made to the ESO roles and principles guidance:

Version	Date published	To be applied	Summary of changes	Link
1.0	July 2017	July 2017 – March 2018	N/A	https://www.ofgem.gov.uk/system/files/docs/2017/07/future_so_re_g_framework_july_2017_working_paper.pdf
Consultation on changes	December 2017	N/A	<ul style="list-style-type: none"> Expanding role one to better reflect the ESO's system operability role 	https://www.ofgem.gov.uk/system/files/docs/2017/12/eso_roles_and_principles_appendix.pdf
2.0	February 2018	April 2018 – March 2019	<ul style="list-style-type: none"> Clarifications on the status and purpose of the roles and principles Clarifications on how the roles and principles will be updated going forward Clarification to principle 4 to include European Network Codes. 	https://www.ofgem.gov.uk/system/files/docs/2018/02/eso_roles_and_principles.pdf

3.0	March 2019	April 2019 onwards	<ul style="list-style-type: none"> • Clarifications and updates to introductory text • Rewording the title of Principle 2 • Clarifications to supporting principle guidance for Principles 2, 3, 5, 6 and 7. 	https://www.ofgem.gov.uk/system/files/docs/2019/03/eso_roles_and_principles_guidance_2019-20.pdf
Consultation on change	January 2020	N/A	<ul style="list-style-type: none"> • Streamlining the roles framework by moving from 4 to 3 roles. 	https://www.ofgem.gov.uk/publications-and-updates/call-input-2020-21-eso-regulatory-and-incentives-framework
4.0	6 March 2020	1 April 2020 – 30 March 2021	<ul style="list-style-type: none"> • Streamlining the roles framework by moving from 4 to 3 roles. • New text on competition and FES 	

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ESO roles

Introduction

- 1.1. The purpose of this guidance document is to provide further explanation of the ESO's roles. These roles are the foundation of the Electricity System Operator (ESO) regulatory and incentives framework. The ESO roles and principles guidance represents our current view of the behaviours expected from the ESO in order to maintain an economic, efficient, and co-ordinated system. The ESO's roles and principles were first introduced as part of our July 2017 Working Paper on the ESO's Future Regulatory Framework.¹ This document contains updated guidance (version 4.0) and builds on the previous guidance (version 3.0) that was issued in March 2019 and our latest RIIIO-2 thinking.² This version of the ESO roles and principles guidance (version 4.0) will continue to underpin the ESO's regulatory and incentives framework from April 2020 onwards.
- 1.2. Alongside the roles are the principles, behaviours and the predominant legal obligations underpinning these. The guidance has been drafted with a high level of generality, with the intention that it should help to outline the overarching requirements or behavioural standards that can be applied flexibly to a rapidly changing electricity sector. The ESO's licence conditions underpin the roles and remain the legal obligations that the ESO must fulfil.
- 1.3. In the rest of this chapter we set out further details of the three roles we have determined for the ESO. Throughout all of these roles are the cross-cutting themes of ensuring the ESO provides most value to consumers (i.e. protecting consumers from undue costs), being a trusted source of information and insight, transparency in its actions, and high levels of engagement with industry and other network operators. Although for presentational purposes we describe each role in turn, in reality the roles will always have a degree of overlap and interaction.

Status and purpose of ESO roles and principles

¹ The original guidance can be found in our July 2017 Working Paper on the future regulatory framework: <https://www.ofgem.gov.uk/ofgem-publications/118930>

² Version 3.0 of the ESO roles and principles guidance: https://www.ofgem.gov.uk/system/files/docs/2019/03/eso_roles_and_principles_guidance_2019-20.pdf

- 1.4. This document provides updated guidance on the ESO's roles and the behaviours we expect to see when the ESO fulfils its roles. This guidance should be considered as a non-exhaustive list of examples of how we currently envisage the ESO to fulfil its roles when undertaking day to day actions to operate and balance the GB transmission system. The roles and principles are underpinned by the ESO's binding licence obligations – particularly the modifications to paragraph 1 of Standard Licence Condition C16 which took effect from 1 June 2017³. We've also structured the guidance to show what we expect to see as evidence of the ESO's compliance with its obligations under C16. In Chapter 2 of this document we've mapped the guidance directly to the C16 text.
- 1.5. **This version of the ESO roles and principles guidance will come into effect on 1 April 2020. The ESO roles and principles guidance will apply from April 2020 onwards until stated otherwise.** Until then, the version of the ESO roles and principles guidance published in March 2019 will continue to have effect, and compliance with it may be taken into account from the date of its issue.
- 1.6. In the event that the ESO does not meet its licence obligations it may be found to be non-compliant. The guidance (in all its version) will inform any future decisions taken by the Authority when considering possible investigation and enforcement issues arising out of non-compliance with the relevant licence obligations⁴.
- 1.7. In the event of formal enforcement proceedings finding a breach of one or more relevant licence conditions, there may subsequently be made an order for payment of a financial penalty and/or consumer redress. The outcome of such procedures would be made publicly available.

Updating ESO roles and principles

- 1.8. We recognise that the continual change in the energy system may mean that this guidance may need to change in future. We will therefore keep this under review.

³ https://www.ofgem.gov.uk/system/files/docs/2017/04/so_incentives_-_decision_standard_licence_conditions_0.pdf

⁴ All decisions taken by the Authority relating to enforcement matters are subject to its [Enforcement Guidelines](#) and [Penalty Policy](#).

Where we believe changes are needed, we would consult with impacted parties, including the ESO.

- 1.9. For the purposes of the ESO incentive process, this guidance will only apply from the start of the 2020-21 regulatory year and we will not use the updated changes to retrospectively assess the ESO's performance as part of the incentive scheme.

Aligning ESO roles and principles with the RIIO-2 framework

- 1.10. The main change to the ESO roles and principles guidance document (version 4.0) has been detailed below. We have implemented the RIIO-2 roles framework (Figure 1 below) by merging this with the existing principles and supporting guidance.

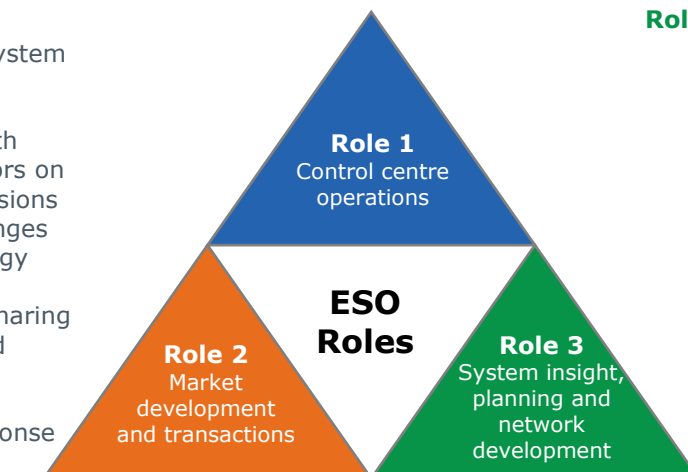
- 1.11. For the avoidance of doubt, no activities or expectations included against each of the previous roles have been removed. They have instead been re-categorised to the most appropriate of the three new streamlined roles.

- 1.12. It is also important to note that the existing ESO principles will not be used as part of the performance evaluation process for 2020-21. The principles will remain as supporting guidance to the ESO roles.

Figure 1: Summary of the ESO roles and activities

Role 1 activities:

- Operating the system (monitoring and dispatch)
- Coordinating with network operators on operational decisions and outage changes
- Short term energy forecasting
- Managing and sharing system data and information
- Restoration and emergency response



Role 2 activities:

- Balancing and ancillary service market design
- Service procurement and settlement
- Revenue collection
- Policy advice and delivery of market framework changes
- Code administrator

Role 3 activities:

- Long term forecasting, energy scenarios and identification of network needs
- Network Options Assessment
- Delivering competitive system solutions and early network competition
- Managing connections and generator access to the network
- Whole system process development

Role 1: Control centre operations

- 1.13. In balancing the electricity transmission system, we believe the ESO should be helping the market to balance the system as much as possible and where it does need to step in to take any actions to secure the transmission system it should be considering impacts across time horizons to ensure the actions it does take drive overall efficiency.
- 1.14. It is important for the ESO to coordinate effectively with other parties to deliver the most efficient and economic outcomes for the whole system.⁵ This includes coordinating with others in ensuring efficient whole system operation and optimal use of resources. Network planning and system operation remain highly interlinked and ESO processes must reflect this.

Principle 1.1: Support market participants to make informed decisions by providing user-friendly, comprehensive, and accurate information

Predominantly underpinned by licence conditions:

C16 1(e) Publishing information which the licensee holds to enable electricity market participants to make efficient operational and investment decisions

C16 1(f) Producing and publishing accurate and unbiased forecasts

- 1.15. Market participants face financial incentives to ensure that what they produce or consume matches what they sell or buy. However, unexpected deviations in generation or demand mean that the market will not always be able to deliver a balance between demand and supply. This can lead to changes in system frequency, which if not dealt with, can lead to system outages. The ESO therefore plays a critical

⁵ Also referred to as 'total system' in standard licence condition C16. For the purposes of this Guidance, Whole System means the national electricity transmission system and the distribution systems of all authorised electricity operators which are located in the national electricity transmission system operator area. Although the focus of this guidance is on the whole electricity system, across all voltage levels, we anticipate a need for more thinking to be undertaken in the future on the need for coordination across the electricity and gas systems.

role in taking actions to keep the system frequency stable when the market is unable to balance.

- 1.16. The overall efficiency of system balancing includes both the costs incurred by the ESO and the costs incurred by market participants to balance their positions. We expect the ESO to support the market to self-balance where possible, thereby minimising the ESO's own role as residual energy balancer.
- 1.17. We think the ESO should publish any relevant information it has that would help market participants to balance their own positions. In doing so the ESO should consider the most effective mechanism for publishing information and avoid duplication or fragmentation with established platforms (for example BMRS). We think this would reduce the natural asymmetry of information between the ESO and other market participants and provide market participants with the tools they need to make informed decisions. We also think the ESO needs to be more transparent around the actions it takes so market participants can factor this into their decision-making. Together, we think this will help market participants to balance the system as much as possible, thereby reducing the ESO's role as a residual energy balancer.
- 1.18. In general, we think the information the ESO collates and provides to the market should be:
- **User-friendly** - the ESO should be regularly and actively engaging with market participants to understand what content market participants need, the preferred format and frequency. It should then tailor its information provision accordingly to ensure it remains as user-friendly as possible. Linked to this, the ESO should ensure that the information it provides on its website can be easily accessed and understood by market participants. For instance, the ESO could publish a comprehensive 'list' of the information it publishes, the timings of any forthcoming related publications and where they will be published on its website so market participants can access the information they need.
 - **Comprehensive** – the ESO should collate as much information as necessary (including speaking to stakeholders) to gain a clear picture on future trends/needs. It should be releasing sufficient information about the system and its actions (wherever it is safe and reasonable to do so) in order to help market participants make informed decisions. Wherever it cannot publish the information that a market participant has requested, the ESO should respond and

communicate this for clarity. For instance, the ESO could consider creating a publicly available process for stakeholders to propose changes or additions to the information published by the ESO. The ESO could evidence how it has taken into consideration any such requests including explanations for withholding any requested information. The ESO may wish to include this information as part of its regular performance reporting.

- **Accurate** - the ESO should maintain robust IT systems and seek continuous improvements to its processes to ensure that this information (particularly forecast data, for example on wind generation and demand) is accurate and unbiased⁶. Inaccurate system forecasts can create uncertainty and risk for the ESO and market participants. This can lead to balancing actions being taken ahead of time unnecessarily when the market could have been able to respond. This can undermine short-term market signals, which can have a knock-on detrimental impact on the investment decisions made by market participants in the long run. For instance, the ESO could conduct regular ex-ante assessments of its forecasting, analysing how accurate its forecasting has been and then evidence to industry how it has addressed any significant deviations and modified its methodology to improve its forecasting ability. Doing so will help to ensure information remains accurate.

⁶ We define accurate and unbiased as follows:

- Accurate – information that is correct at the time of publication and as close as reasonably possible to the actual value.
- Unbiased – information that is not skewed in any way and is as accurate/close as reasonably possible to the true value.

Principle 1.2: Operate the system safely and securely, whilst driving overall efficiency and transparency in balancing strategies across time horizons

Predominantly underpinned by licence conditions:

C16 1(a) Taking the most efficient actions to balance the transmission system based on the information available to the licensee at the time

C16 1(b) Taking into account the impact such actions have on competition in the wholesale electricity market and on the total system

- 1.19. The ESO is required to operate the transmission system safely and securely in real time.⁷ Its actions should ensure a reliable and resilient system now and in the future. In doing so, the ESO plays a critical role, taking actions to keep the system frequency stable when the market is unable to balance. The ESO is also responsible for taking balancing actions on different parts of the transmission network to deal with system operability issues and network constraints. The ESO undertakes this role using the Balancing Mechanism (BM) and through procuring a number of additional balancing services (or ancillary services) to ensure the needs of the system can be met. In order for the ESO to do this as efficiently as possible, it should be taking the most economic action that solves the system’s balancing and/or operability need.
- 1.20. We expect the ESO to strike an appropriate balance between short-term reductions in balancing costs and the longer-term development of balancing services markets. Longer-term considerations include, for example, developing new markets or simplifying existing product requirements. These developments may realise greater cost savings in the future; therefore, we would like to see the ESO thinking across time horizons and taking a strategic approach to drive overall efficiency in system balancing processes.

⁷ These requirements sit in Section C of NGET’s licence. From April 2019, these requirements will sit in Section C of NGESO’s licence.

- 1.21. In order to drive overall efficiency in system balancing processes, we think the ESO should consider the following when making any decisions. Specifically, the ESO should be taking a risk-based approach (at a regional and national level) to plan and mitigate against any adverse market conditions that might be expected to arise in the future. For instance, by referring to future energy market scenarios and pre-empting future energy system needs (as specified under Role 3). The ESO should also consider the evolution of the system when undertaking any balancing actions in the present. Such considerations may include the types of resources expected to be available to provide balancing services and the types of services that the ESO may require in the future. The ESO should also ensure that balancing systems (IT systems and balancing processes) are kept up to date in order to drive overall efficiency and transparency in system operation and to facilitate continued market access for existing and new market participants.
- 1.22. Secondly, the ESO should be taking into account the impact its balancing actions have on the market (in particular, the possible impacts on market participants' behaviour and decision making) and wholesale costs both in the short and in the medium to longer term.
- 1.23. In order to demonstrate compliance with this principle, the ESO should consider developing and applying a clear and transparent internal 'decision framework' that would take into account point 1.21 and 1.22 above. We would expect the ESO to use this decision framework to underpin the types of internal analysis that will be used to derive its optimal procurement strategy for balancing and ancillary services (for example, in determining the volume of balancing services to be procured closer to real-time vs the volume procured further in advance).
- 1.24. The ESO may wish to refer to this framework and detail its development and application as part of the ESO's regular performance reporting. We expect the ESO to remain transparent and, if requested by the Authority, show clear documentation of this framework. The ESO could include, as a part of the framework, the nature of any engagement or initiatives to improve market participants' ability to balance efficiently prior to gate closure. The ESO could also set up an audited process by which it could conduct regular reviews of the framework to take into account and embed any lessons learned from its past application.

Principle 1.3: Coordinate effectively to ensure efficient system operation and optimal use of resources

Predominantly underpinned by licence conditions:

C16 1(a) Taking the most efficient actions to balance the national electricity transmission system based on the information the licensee had at the time

C16 1(b) Taking into account the impact such actions have on competition in the wholesale electricity market and on the total system

C16 1(c) Considering the impact any action would have on the total system

C16 1(d) Optimising the timing of transmission outages under the outage plan on the national electricity transmission system

- 1.25. We expect the ESO to take a whole system perspective in operating the transmission network. In doing so, the ESO should participate in, and drive forward, industry-wide processes (and encourage other parties to do so) to clearly define roles and coordination processes that ensure appropriate optimisation, dispatch and monitoring of resources connected across the system.
- 1.26. The ESO should work with other network operators to build a common understanding of system requirements and the potential impact of actions, where actions taken by one system/network operator could have cross-network impacts (both positive and negative). This should be supported by information availability and exchange.
- 1.27. We expect the ESO to coordinate with network operators on activities with cross-boundary relevance and develop appropriately standardised and transparent approaches to sharing information and on the design of systems and processes. This includes, but is not limited to, operations, including market interactions and forecasting, as well as actions to ensure optimal use of resources.
- 1.28. The whole system approach should provide the ESO with opportunities to exploit synergies or mutually beneficial operational decisions across transmission and distribution voltage levels. We therefore expect the ESO to work with other network

operators to identify opportunities that optimise synergies or mutually beneficial operational decisions across network and system boundaries. For example, a single action could address constraints on both the transmission and distribution networks. Once identified, the ESO should coordinate with other network operators to optimise these synergies and therefore maximise consumer benefits.

- 1.29. We expect the ESO to develop processes with other network operators that ensure optimal resource utilisation across the network. For example, this should include putting in place contractual or market arrangements and information sharing protocols that support optimised resource use and enable all energy resources to maximise the range of value streams accessible to them.
- 1.30. Coordination should be proportionate, considering the likelihood of the costs and benefits that licensees expect over time, once processes are established.
- 1.31. In addition, in undertaking its current role as the manager and gatekeeper of transmission system outages we expect the ESO to optimise the timing and coordination of transmission outages to maximise efficiencies across the system as a whole.
- 1.32. When co-ordinating, scheduling and approving transmission outages, the ESO should consider how the timings of transmission outages may optimise consumer benefits (or minimise costs) by considering the impacts of outages across the whole electricity system and across short, medium and long-term time frames.

Role 2: Market development and transactions

1.33. We expect the ESO to be encouraging and facilitating competition in all markets that it can affect. This covers the balancing and ancillary services markets where the ESO is the lead and principal buyer and the remaining markets that the ESO can affect (i.e. wholesale and capacity markets).

Principle 2.1: Ensure the rules and processes for procuring balancing services maximise competition where possible and are simple, fair and transparent

Predominantly underpinned by licence conditions:

C16 1(g) Ensuring the procurement of balancing services is transparent

C16 1(h) Ensuring that the technical requirements of balancing services do not restrict new and existing balancing service providers from competing in those services

C16 1(i) Anticipating future national electricity transmission system requirements by using and developing competitive approaches to procuring balancing services wherever this is in the best interests of current and future consumers

1.34. As mentioned previously, in addition to running the BM, the ESO develops and procures a number of additional balancing services to ensure the needs of the system can be met. The design of these services and approach to procurement can have a significant impact on the revenue available to different providers and the ability for new entrants to compete with existing providers. This can have a further impact upon short term price signals and revenues in the main electricity market.

1.35. Although the ESO's approach to procuring balancing services must follow the high level framework set out in the Transmission Licence C16 statements⁸ (which we approve each year), it has significant scope and flexibility in the design of these services.

1.36. We think the ESO should ensure its procurement of balancing services, including the rules and processes, maximise competition where possible, and are simple, fair and transparent. We explain each in further detail below:

- **Competitive and market-based:** the ESO should procure ancillary services competitively to maximise inclusiveness and to ensure open and fair competition wherever possible. Examples of optimal market-based structures the ESO could consider include tenders or auctions. Where there is currently insufficient competition for market-based approaches, the ESO should consider what steps should be taken to develop a market for that service in the future. Where the ESO procures balancing services through a non-competitive route, there should be clear justifications (in terms of the impact to consumers) for why this is better for consumers' interests than a competitive approach.
- **Simple:** the ESO should rationalise its product offering, ensuring products are aggregated wherever there is overlap. Products should also have similar or coordinated procurement timings to provide parties with greater certainty when bidding into different mechanisms. The ESO should also ensure it is sending clear price signals in order to procure an efficient mix of balancing providers.
- **Fair:** the ESO should limit, wherever possible, exclusivity requirements to enable providers of balancing services to stack revenue streams. We recognise that in some cases, exclusivity agreements are warranted but the ESO should consider regularly reviewing technical requirements to ensure they remain fair, providing a justification to the market wherever they are used. The ESO could also consider creating a publicly available process by which potential new and existing balancing service providers may test any existing restrictions (i.e. to pitch for their product). The ESO should also procure ancillary services in a way that facilitates existing and new providers to compete on a level playing field, regardless of size or type.

⁸ <http://www2.nationalgrid.com/uk/industry-information/electricity-codes/balancingframework/transmission-license-c16-statements/>

It is the ESO's responsibility to ensure that its service / technical requirements remain responsive to changing technologies and innovation and do not unduly restrict access to certain market participants.

- **Transparent:** the ESO should communicate its expected procurement needs to the market, giving the market as much notice as possible. The ESO should also be able to justify its decisions to procure a particular portfolio of products to the market. It should also strive to ensure that market participants have confidence in the ESO's choice of procurement methods/activities. For instance, the ESO could comply with this point by publishing on its website the total amount of various products it procures through bilateral contracts so market participants have a more accurate view as to when they might be called on. Where the ESO isn't able to publish this information, it should justify why that information is being kept from the public domain.

1.37. We think the ESO could achieve 1.36 above by publishing on its website the high-level approach it takes to procure balancing services, including an explanation for the preferred make-up of the portfolio of products, the associated timeframe and reasoning for restrictions applying to each. We would expect the ESO to follow this approach for each contract entered into. If requested by the Authority, the ESO should be able to show clear documentation and if necessary justification of any deviation from this approach.

1.38. The ESO should ensure its systems and processes for balancing and settlement are kept up to date. These systems and processes should be reviewed and updated as necessary to facilitate continued market access for existing and new market participants.

Principle 2.2: Promote competition in wholesale and capacity markets

Predominantly underpinned by licence conditions:

C16 1(e) Publishing information which the licensee holds to enable electricity market participants to make efficient operational and investment decisions

C16 1(i) Anticipating future national electricity transmission system requirements by using and developing competitive approaches to procuring balancing services wherever this is in the best interests of current and future consumers

- 1.39. In addition to running the BM and procuring ancillary services, the ESO also has a number of additional roles outside of direct balancing. In particular, the ESO is a party to the Balancing and Settlement Code (BSC), and also has a fixed representative on the BSC Panel. The ESO is the code administrator for the Connection and Use of System Code (CUSC), and the Grid Code and a party to the Distribution Code. The ESO is able to propose changes to these codes, provide its expertise and analysis to aid industry discussions, and influence the final recommendations which go to the Authority. It is also the delivery body for the Government's Electricity Market Reform (EMR). The ESO is also responsible for implementing European network codes.
- 1.40. In order to facilitate competitive markets, we believe the ESO should be encouraging and actively driving forward competitive solutions and approaches wherever competition would drive efficiency and lead to consumer benefits. For instance, we expect the ESO to play an active role in ensuring the code arrangements named under 1.39 promote competition. We expect the ESO to identify and deliver actions to remove market distortions, at both transmission and distribution levels, providing a more level playing field for all market parties.
- 1.41. We believe the ESO should have an active role in understanding how market arrangements interact and in identifying opportunities to make trade-offs or access synergies across mechanisms that can lead to greater competition and better consumer outcomes overall.
- 1.42. For all interactions the ESO has with market arrangements, we expect the ESO to promote competition by:

- Engaging more actively with industry to understand the nature of the challenges and distortions to competition in code arrangements, including in regards to the methodologies for use of system charging.
- Proposing and supporting pro-competitive modifications to industry codes where these are in the interests of current or future consumers. Such modifications should take a holistic view of the electricity system and ensure balancing services providers are able to compete on a level playing field. We think a particular key role for the ESO is to identify and propose changes to code arrangements to ensure that new providers are able to compete on a level playing field with existing providers. We also think the ESO should be supporting modifications raised by industry by providing a detailed level of analysis, modelling and scenario building as part of its impact analysis. This analysis should stand up to rigorous challenge and avoid claims of bias.

1.43. Wherever it isn't in the best interests of current or future consumers to promote competition, we expect the ESO to be able to justify and rationalise any decision it takes to follow a non-competitive route with code arrangements.

1.44. Promoting competition in GB markets includes taking into consideration the effect European network codes can have on the UK market and driving these forward where in the interests of GB consumers.

Role 3: System insight, planning and network development

1.45. It is important for the ESO to coordinate effectively with other parties to deliver the most efficient and economic outcomes for the whole system.⁹ This includes coordinating with others across network boundaries when undertaking network planning and development. The ESO should also facilitate competition to ensure value for consumers and to drive innovation.

Principle 3.1: Coordinate across system boundaries to deliver efficient network planning and development

Predominantly underpinned by licence conditions:

C16 1(c) Considering the impact any action would have on the total system

C16 1(e) Publishing information which the licensee holds to enable electricity market participants to make efficient operational and investment decisions

1.46. The ESO is expected to engage with a wide set of stakeholders, including Ofgem, to gather diverse views on topic areas in the Future Energy Scenarios (FES). Furthermore, the ESO should record stakeholder views in order to demonstrate the impact of stakeholder feedback on both its decision making and its influence on analysis alongside that of internal research and expertise. The ESO and Ofgem will agree in principle the breadth of stakeholder engagement at the start of the annual FES process, with regular informal touchpoints throughout the process for ongoing updates and any proposals for further engagement.

⁹ Also referred to as 'total system' in standard licence condition C16. For the purposes of this Guidance, Whole System means the national electricity transmission system and the distribution systems of all authorised electricity operators which are located in the national electricity transmission system operator area. Although the focus of this guidance is on the whole electricity system, across all voltage levels, we anticipate a need for more thinking to be undertaken in the future on the need for coordination across the electricity and gas systems.

- 1.47. The ESO should share with Ofgem its emerging thinking, accompanied with justification and stakeholder feedback where applicable and if possible ahead of major decisions in the FES framework.
- 1.48. The Stakeholder Feedback Document, with supporting discussion and additional materials should be provided to Ofgem to demonstrate the stakeholder input and how it has influenced the Future Energy Scenarios.
- 1.49. The ESO will discuss and agree any material changes to the FES process and annual plan, subject to resource considerations, before the process commences.
- 1.50. The ESO should ensure that data gathering and analysis processes are robust throughout the development of the FES, and quality assurance exercises should be undertaken where necessary.
- 1.51. We expect the ESO to collaborate, communicate and coordinate with other network operators to identify and support the delivery of the most efficient network planning and development solutions for the whole system. This should be built on a foundation of mutually agreed and clearly defined roles across the transmission-distribution interface, which minimise unnecessary overlap or duplication. This requires the ESO to participate in, and drive forward, industry-wide processes (and encourage other parties to do so).
- 1.52. The types of efficient planning and development solutions that we may expect to see include full consideration of build and non-build options that include flexible, smart investments and which may mitigate the need for network reinforcements. Similarly, we may expect to see progression of solutions at distribution level that could relieve transmission network challenges and transmission level solutions that could relieve distribution network challenges. In such situations we expect the ESO and other regulated network companies to engage proactively with each other to consider how procuring solutions from one another could lead to minimising costs and maximising consumer benefits across the whole system.
- 1.53. In identifying the most efficient network planning and development solutions, we expect the ESO to work closely with other network operators. Such collaborative work may include: gathering and sharing relevant information (including forecasts) with each other and industry; co-developing whole system network models; putting in place processes to proactively identify opportunities for efficiency savings and consumer

benefits across network boundaries; and coordinated assessments of whole system resilience and operability, including identifying implications associated with greater volumes of distributed energy resources.

1.54. Once identified, it is important that the ESO supports and, where relevant, drives forward the delivery of the most efficient network planning and development solutions. We therefore expect the ESO to:

- Engage with other network operators in developing plans that present a coordinated view of whole system's network development needs
- Ensure appropriate frameworks and contractual arrangements exist (e.g. funding transfers) to optimise investments across the transmission-distribution boundary
- Work with other network operators to deliver efficient constraint management processes and connection arrangements (including the statement of works process) which meet the needs of connectees across the system
- Develop processes to support timely resolution and avoidance of system issues, for example, working with other network operators and industry to ensure whole system perspectives are incorporated into network emergency and restoration plans.

Principle 3.2: Facilitate timely, efficient and competitive network investments

Predominantly underpinned by current, as well as proposed, licence conditions:

Standard Condition C27: The Network Options Assessment process and reporting requirements

Concluding ITPR licence changes to enhance the role of the ESO -

https://www.ofgem.gov.uk/sites/default/files/docs/2015/09/itpr_decision_cover_letter_0.pdf

- 1.55. We expect competition in network investment to bring value for consumers in terms of capital and operational cost savings and drive innovation across the asset development and operations process, including financing. Competition may be demonstrated by, but not limited to, the creation of a strong competitive field through attracting new entrants and new approaches to ideas, design, financing, construction and operation of network infrastructure and alternative solutions.
- 1.56. The ESO should use the Network Options Assessment¹⁰ (NOA) to identify long-term electricity system needs, develop and assess options, including where appropriate by engaging with the market, to meet these needs and assess whether projects meet the criteria for competitive delivery. As part of this, we expect the ESO to demonstrate that it has undertaken a thorough assessment of possible options, and meeting – where applicable - principles of best practice for competition. This may include, but not be limited to, proposing innovative solutions not brought forward by networks (including non-build solutions), proposing or assessing alternative build solutions and proposals, and coordinating cross-regional solutions, and driving the early market-led development of these solutions. We consider that the ESO should take a more

¹⁰ The NOA is a licence obligation under National Grid's System Operator (SO) role which has come from the Integrated Transmission Planning and Regulation (ITPR) project. Further details can be found here: <http://www2.nationalgrid.com/UK/Industry-information/Future-of-Energy/Network-Options-Assessment/>

proactive and holistic approach to system planning, in line with the original intentions of our ITPR project, to facilitate timely and efficient network development.

- 1.57. We are continuing to consider the most appropriate roles for the ESO before, during and after competitions for delivery of network solutions. This includes in relation to both 'early' and 'late' models of competition that operate with and without Competitively Appointed Transmission Owner (CATO) legislation¹¹. For 'early' competition models we have asked the ESO to develop and consult on an early competition plan, setting out its view on proposed early competition models and proposed roles and responsibilities of all parties in those models¹². For 'late' competition models we will continue to consider the roles and responsibilities of parties (including the ESO) in relation to the undertaking of preliminary works (including, but not limited to, works in relation to surveying, early design, planning permissions, and consents) for projects that meet the criteria for late model competition and are due to be constructed in the RIIO-T2 period and beyond. We remain committed to working with government to seek an appropriate opportunity to introduce the legislative change necessary to implement the CATO model. In the interim, we continue to consider that there are significant benefits to consumers in introducing competition into the delivery of new, separable and high value electricity transmission projects, and consider that the ESO should support future delivery models, e.g. through its role in the NOA, as well as through information provision.

¹¹ CATO legislation refers to any final legislation (however so named) which covers the underlying purpose of granting a licence following a competition in any network sector

¹²

https://www.ofgem.gov.uk/system/files/docs/2019/09/electricity_system_operators_early_competition_plan_letter_0.pdf

Mapping the guidance to Standard Licence Condition C16

The table below is intended to support the ESO's interpretation of the guidance in Chapter 1 through mapping it directly to the relevant C16 licence modifications.¹³ In Chapter 1, we indicated which licence obligations predominantly underpin each principle. However, as shown below, there are elements of the guidance that cut across several licence obligations. Figure 2 also maps the different aspects of the modified C16 licence conditions to the Roles.

Mapping the guidance to the C16 licence conditions

a) taking the most efficient actions to balance the national electricity transmission system based on the information the licensee had at the time

We expect the ESO to minimise the overall costs of balancing the system by taking the most efficient actions. The most efficient actions are the most cost-effective actions that satisfy the needs of the ESO. However, in making this assessment we expect the ESO to consider the balance between short term and long term cost minimisation, future needs of the system, the behaviours and incentives for current and prospective market participants and impacts across voltage levels.

For further details, refer to paragraphs 1.20, 1.21, 1.22, 1.23, 1.24, 1.25, 1.26, 1.27, 1.28, 1.29, 1.30.

b) taking into account the impact such actions have on competition in the wholesale electricity market and on the total system, and in doing so, the licensee shall:

(i) compare the costs of actions outside the balancing mechanism with the likely costs of actions inside the balancing mechanism; and

(ii) consider the likely impact any such action would have on:

¹³ https://www.ofgem.gov.uk/system/files/docs/2017/04/so_incentives_-_decision_standard_licence_conditions_0.pdf

(aa) wholesale electricity market price signals;

(bb) the behaviour of electricity market participants; and

(cc) the efficiency of the national electricity transmission system;

The ESO's balancing actions may have impacts on competition in the wholesale market and wider consequences for the whole electricity system. We expect the ESO to take these potential impacts into consideration when deciding which actions to take. Specific considerations may include the balance between short term and long term cost minimisation, future needs of the system, the behaviours and incentives for current and prospective market participants and impacts across voltage levels.

For further details, refer to paragraphs 1.20, 1.21, 1.22, 1.23, 1.24, 1.25, 1.26, 1.27, 1.28, 1.29, 1.30.

c) considering the impact any action would have on the total system;

We expect the ESO to take broad consideration of the impacts of its actions on the total electricity system. This includes close working with other network operators to identify the most efficient network planning and development solutions; drive forward the delivery of the most efficient network planning and development solutions; build a common understanding of where actions taken by one system/network operator could have cross-network impacts; exploit synergies or mutually beneficial operational decisions across transmission and distribution voltage levels; and develop processes with other network operators that ensure optimal resource utilisation across the network.

For further details, refer to paragraphs 1.26, 1.27, 1.28, 1.29, 1.30, 1.51, 1.52, 1.53 and 1.54.

d) optimising the timing of transmission outages under the outage plan on the national electricity transmission system;

When co-ordinating, scheduling and approving transmission outages, the ESO should consider how the timings of transmission outages may optimise consumer benefits (or minimise costs) by considering the impacts of outages across the whole electricity system

and across short, medium and long-term time frames. For further details, refer to paragraphs 1.31, 1.32 and 1.54.

e) publishing information which the licensee holds to enable electricity market participants to make efficient operational and investment decisions;

As there is a natural asymmetry of information between the ESO and market participants, we expect the ESO to engage with market participants to understand which information they would like (and the format and frequency they require). We expect the ESO to publish as much of this information as possible. This applies to all actions taken inside and outside of the Balancing Mechanism (BM), for all interactions it has with market/code arrangements, and all interactions it has with other market participants (network operators), throughout all of its various roles as ESO.

For further details refer to paragraphs 1.17, 1.18, 1.26, 1.27, 1.28, 1.29, 1.36, 1.37, 1.42, 1.53, 1.56 and 1.57.

f) producing and publishing accurate and unbiased forecasts of:

(i) indicated margin;

(ii) demand;

(iii) wind generation output; and

(iv) balancing costs;

We expect the ESO to provide market participants with the tools they need to make informed decisions and balance their own positions as best as possible, thereby reducing its own role as residual balancer. In order to do this, the ESO should provide accurate and unbiased forecasts and maintain robust IT systems, seeking continuous improvements to its processes to ensure the information it releases remains as accurate and unbiased as possible.

We define accurate and unbiased as follows:

- Accurate – information that is correct at the time of publication and as close as reasonably possible to the actual value. Conversely, inaccurate information would

be anything that sends an incorrect signal to market participants and causes market participants to react differently than they would have done had they been given true and accurate information (e.g. taking unnecessary balancing actions ahead of time)

- Unbiased – information that is not skewed in any way and is as accurate/close as reasonably possible to the true value.

For more information, refer to the paragraphs 1.17 and 1.18.

g) ensuring the procurement of balancing services is transparent;

We expect the ESO to be as open as possible about its actions (inside and outside of the Balancing Mechanism (BM)) and its expectations of the market, in order to reduce the information asymmetry between the ESO and market participants. This will help market participants balance their own positions and make efficient investment decisions as well as giving them confidence in the ESO's procurement methods and activities.

For further details, refer to paragraphs 1.36 and 1.37.

h) ensuring that the technical requirements of balancing services do not restrict new and existing balancing service providers from competing in those services;

We expect the ESO to remain technology neutral and create a level playing field for different service providers (old and new) to compete. We think the ESO could achieve this by simplifying its product offering and limiting exclusivity and/or technical requirements for balancing services wherever possible to ensure fair and open competition amongst all players regardless of size or type.

For further details refer to paragraphs 1.35, 1.36 and 1.37.

i) anticipating future national electricity transmission system requirements by using and developing competitive approaches to procuring balancing services wherever this is in the best interests of current and future consumers.

We believe using competitive approaches wherever possible has the potential to maximise consumer welfare. We think the ESO should be thinking about where it can deploy competitive approaches (e.g. tenders and auctions) when it is taking actions inside and outside the Balancing Mechanism (BM). The ESO should be anticipating future system trends/needs by collating as much information as possible.

More generally, the ESO should be promoting competition in all interactions it has with market arrangements by engaging with industry and supporting pro-competitive modifications where this is in the interests of consumers.

For more detail, refer to paragraph 1.18, 1.36, 1.37, 1.40, 1.41, 1.42, 1.43, 1.46, 1.47, 1.48 and 1.49.