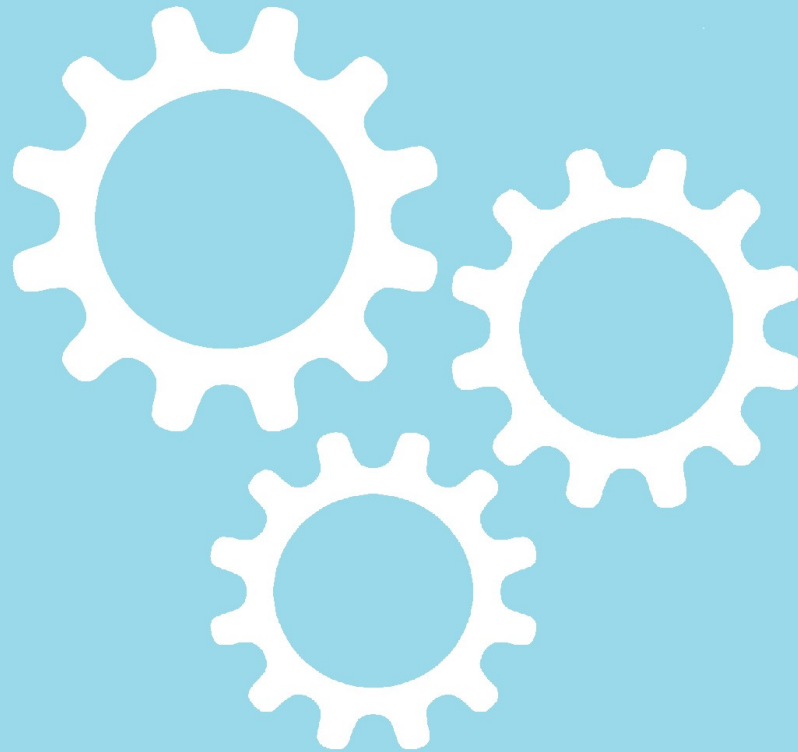


11 July 2017

Future Arrangements for the Electricity System Operator: Working Paper on the Future Regulatory Framework



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Context

Ofgem, the Department for Business, Energy and Industrial Strategy (BEIS), and National Grid jointly agreed that a more independent electricity system operator (SO) can realise benefits for consumers by enabling a more secure, competitive and flexible system. In addition, last year Ofgem and BEIS published a call for evidence on moving to a smart, flexible energy system, in which we set out initial thinking and expectations on the SO's future role.

To support the SO's greater independence, earlier this year we consulted on the future arrangements for the SO and modified the SO's licence to further clarify the existing obligations on the SO when undertaking day to day actions to balance the GB transmission system. We expect the process to redesign the SO's incentives and regulatory framework to run until the end of 2017, with implementation of a new scheme in April 2018.

We are publishing this working paper as an interim update to stakeholders. It serves several purposes:

- it sets out our latest thinking on the future arrangements for the electricity system operator (SO), informed by stakeholder responses to our consultations held earlier this year;
- it illustrates our thoughts on a new, high-level regulatory framework for the SO built around the four roles that we proposed in our consultations earlier this year and which were well supported by the stakeholder responses;
- it explains our expectations for how the SO may fulfil these roles; and
- it also sets out guidance as to how we would expect the SO to behave in order to comply with the licence obligations under (amended) Standard Licence Condition C16.

Following the publication of this working paper, we will begin the development of options for the detailed design of the new SO incentives scheme later this summer. We intend to undertake more formal stakeholder engagement in Autumn to assist us in assessing the options and specifying the details of a new SO incentives scheme that will begin in April 2018. We do not expect stakeholders to formally respond to this working paper. However, we welcome stakeholder views and if there are particular comments you would like to share with us, please do so using the contact details on the front cover.

Associated documents

Future arrangements for the electricity SO

Future arrangements for the electricity System Operator: the regulatory and incentives framework:

<https://www.ofgem.gov.uk/publications-and-updates/future-arrangements-electricity-system-operator-regulatory-and-incentives-framework>

Future arrangements for the electricity system operator: its role and structure:

<https://www.ofgem.gov.uk/publications-and-updates/future-arrangements-electricity-system-operator-its-role-and-structure>

Statement on the future of electricity system operation:

https://www.ofgem.gov.uk/system/files/docs/2017/01/statement_on_the_future_of_electricity_system_operation.pdf

Current SO incentives schemes

Final Proposals for electricity System Operator incentives from April 2017:

<https://www.ofgem.gov.uk/publications-and-updates/final-proposals-electricity-system-operator-incentives-april-2017>

Decision for electricity System Operator incentives from April 2017 - Modification of Standard and Special licence conditions of the transmission licence:

<https://www.ofgem.gov.uk/publications-and-updates/decision-electricity-system-operator-incentives-april-2017-modification-standard-and-special-licence-conditions-transmission-licence>

A Smart, Flexible Energy System

A Smart, Flexible Energy System - call for evidence

https://www.ofgem.gov.uk/system/files/docs/2016/12/smart_flexible_energy_system_a_call_for_evidence.pdf

CEER Position Paper on the Future DSO and TSO Relationship

http://www.ceer.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Cross-Sectoral/2016/C16-DS-26-04_DSO-TSO-relationship_PP_21-Sep-2016.pdf

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Executive Summary

Ofgem, BEIS and National Grid jointly agreed that a more independent electricity SO would be best placed to drive the transition towards a smarter, competitive, more flexible electricity system. We believe that such independence should be built on a regulatory framework that is transparent, joined-up and sets clear expectations for the SO. In particular, the framework should provide stakeholders with confidence that the SO is acting in the best interests of the system and consumers and gives stakeholders a platform to hold the SO to account. We believe that financial incentives have an important role in driving the SO to innovate and improve its performance in order to unlock benefits for consumers. In addition we think that incentives approaches need to change to ensure that they remain consistent and commensurate with the evolving roles of the SO.

The period from 2018, when the current SO incentives scheme expires, to 2021, when the first RIIO price control ends, provides a window to try new and innovative approaches to regulating and incentivising the SO. This will inform the development of consolidated arrangements from 2021. Our high-level framework proposed in this working paper comprises:

- A clear set of 'principles' for the SO to follow, which aim to add clarity about the behaviours we expect from the SO across all of its roles
- An onus placed on the SO to engage effectively with its existing and potential future stakeholders on the way it will meet its principles
- Regularly published key performance indicators, developed by Ofgem in collaboration with the SO and industry
- A greater role for external parties, including the potential introduction of a new panel, responsible for challenging the SO on its performance
- Transparent and well governed financial incentives which encourage the SO to innovate, drive continuous improvements and select the best *overall* actions for consumers

The latter half of this working paper focuses on the top layers of our framework and builds on the four overlapping SO roles we identified in our previous consultations: acting as a residual balancer; facilitating competitive markets; facilitating whole system outcomes; and supporting competition in networks. Alongside the roles are the principles and predominant legal obligations which underpin these. The principles are drafted with a high level of generality, with the intention that they should be considered as overarching requirements or behavioural standards. As such they may change over time depending on the circumstances and context.

The guidance that accompanies the principles aims to strike a balance between setting clear expectations and not being overly prescriptive. The guidance explains the behaviours we expect to see as evidence of the SO's compliance with its obligations under Standard Licence Condition C16 (see the table in Appendix 2,

which sets out how we expect the SO to comply with the C16 licence obligations). This guidance relating to compliance with C16 will have effect, and compliance with it may be taken into account, from the date of its issue, 11 July 2017. We may issue updated guidance at a later date.

We intend to have a new incentives scheme in place by April 2018 and we will continue to engage with stakeholders throughout its development. In the next stage of our work we will begin to develop options for the design of SO performance metrics and financial incentives. We intend to share this work and test our ideas with stakeholders workshops in Autumn.

1. The Future Regulatory Framework

Introduction

1.1. This chapter describes our latest thinking on the future design of the regulatory framework for the electricity SO. This builds on the feedback we received in our consultations and workshop held earlier this year.¹

1.2. Stakeholders responded positively to our initial thinking on the future SO regulatory framework. There was broad support for introducing a new approach that encourages the SO to place more emphasis on whole system outcomes and to drive longer-term improvements to market arrangements. Stakeholders also supported a more transparent, joined-up framework that sets clearer expectations for the SO, as well as changes to give industry a better platform to hold the SO to account.²

Key features of the SO regulatory framework from 1 April 2018

1.3. As discussed in more detail in our earlier consultations, we believe that achieving our future objectives³ for the SO regulatory framework is likely to need a series of step-changes over the coming years. In particular, we see 1 April 2021 (when key aspects of the current framework expire, including the current transmission price control and the SO's Electricity Market Reform incentives) as an opportunity to consider introducing one, consolidated regulatory scheme for the SO.

1.4. We believe the next three years provide a good opportunity to try new, innovative regulatory and incentives approaches that could help drive improved behaviours from the SO and inform our approach from 2021 onwards. We are therefore considering a number of key changes to the existing framework during this period.

1.5. Figure 1 illustrates our high level thinking on the design of the regulatory framework from 1 April 2018 onwards. The key features of this model are:

- A clear set of 'principles' for the SO to follow, which aim to add clarity about the behaviours we expect from the SO across all of its roles

¹ Consultations on the future arrangements for the electricity System Operator:

<https://www.ofgem.gov.uk/electricity/transmission-networks/electricity-so-reform>

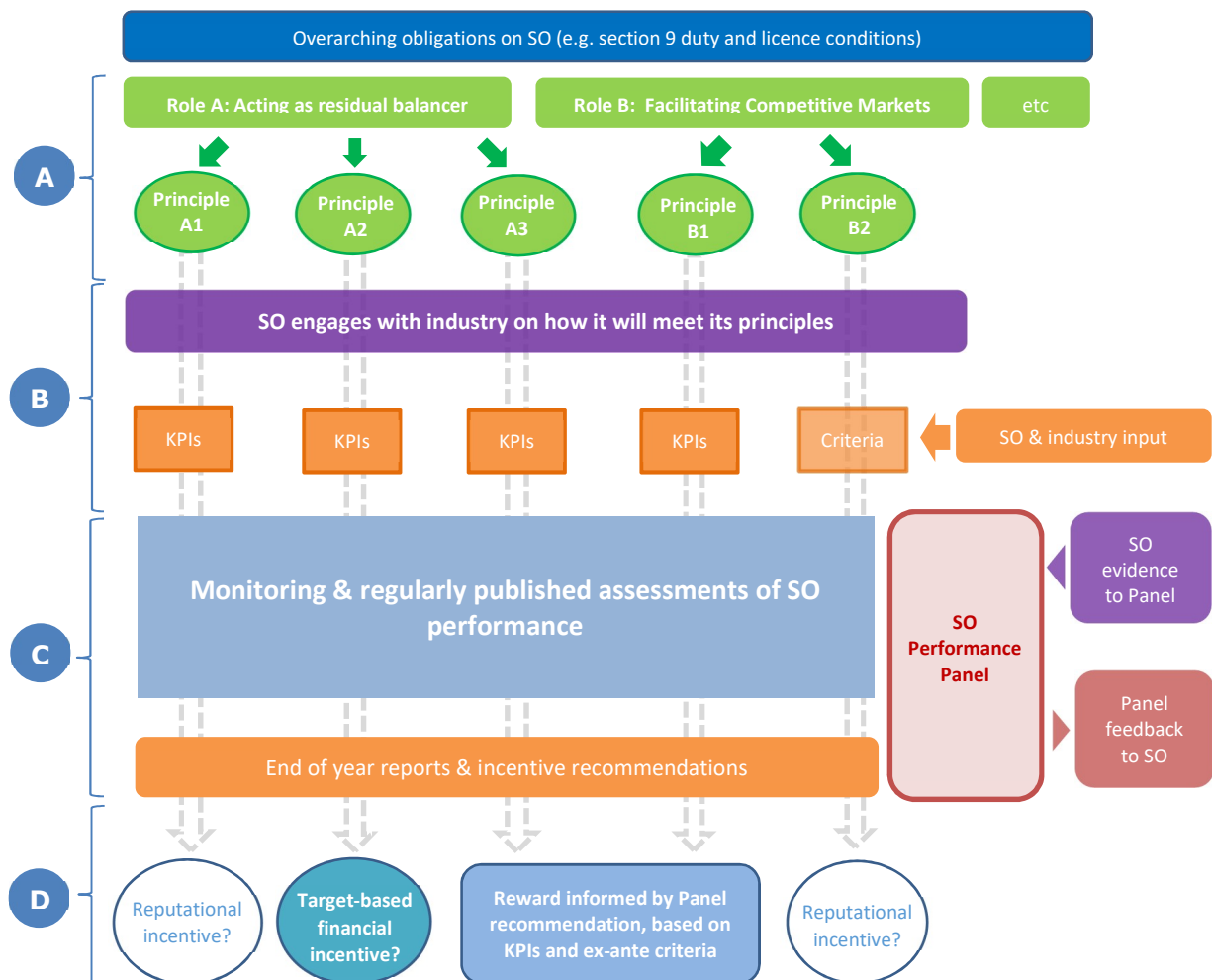
² For a fuller summary of responses, please see the associated document to this working paper.

³ See page 9 of 'Future arrangements for the electricity System Operator: the regulatory and incentives framework': <https://www.ofgem.gov.uk/publications-and-updates/future-arrangements-electricity-system-operator-regulatory-and-incentives-framework>

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- An onus placed on the SO to engage effectively with its existing and potential future stakeholders on the way it will meet its principles
- Regularly published key performance indicators, developed by Ofgem in collaboration with the SO and industry
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Figure 1: High-level SO regulatory model 2018-2021



1.6. We describe each of the key elements of the high-level framework (parts A to D in the diagram) in more detail in the sections below. We welcome views on this

high-level model and intend to work further with stakeholders over the coming months to develop the detailed changes that will apply from 1 April 2018.

A) SO's roles and principles

1.7. The first aspect of our future regulatory framework is a clear set of roles and objectives for the SO. We set out four roles for the SO in our January consultation: acting as a residual balancer; facilitating competitive markets; facilitating whole system outcomes and supporting competition in networks. These received broad support from stakeholders.

1.8. To help support and clarify the behaviours we expect from the SO under each role, we also want to introduce a number of 'principles' for it to follow. A key purpose of these principles is to create a more transparent regulatory framework and help ensure that all parties have aligned expectations. Our intention is that any future assessments of the SO's performance and incentives would have clear links back to these overarching principles.

1.9. At the heart of our framework design is our belief that the future framework needs to encourage the SO to be proactive and seek the best *overall* actions for consumers, taking into account its customers' views and the wider system's needs. The SO needs to identify issues before they arise and to be innovative in the way it approaches problems. This means the SO placing less emphasis on managing the regulatory framework and the mechanics of incentives, and taking greater ownership of its objectives and system outcomes.

1.10. We believe that achieving these aims means avoiding setting detailed, prescriptive obligations or guidance. This is particularly important when considering the complex trade-offs involved in the SO role, and our belief that the SO is best placed to understand how to manage these trade-offs. An overly prescriptive framework may encourage the SO to focus on a set of outcomes that is too narrow or inadvertently constrain its ability to innovate. We have therefore aimed to ensure our principles strike a balance between setting clear expectations without being prescriptive.

1.11. Whilst we are aiming to design principles that are comprehensive and set clear future expectations for the SO across all its roles in the energy system, we also recognise that this may not be fully possible or appropriate at this time. In particular, principles may need to change as the system transforms and we gain more clarity about the role of other parties (such as Distribution System Operators (DSOs)).

1.12. We see agreeing the SO's roles and principles as the key first step in creating the new regulatory framework. Our latest thinking on these principles is set out in **Chapter 2**. We welcome views on these principles, and in particular, whether they meet our aim of setting clear expectations without being prescriptive.

B) Setting performance metrics

1.13. The next part of the framework is the process for establishing how the SO's performance against its principles is measured. We want to place an onus on the SO to engage with its stakeholders on the main steps that it will take to meet its principles, both in the short term and over the longer term. We think that this engagement should also seek views on the key indicators that would be used to measure success.

1.14. Based on this engagement, we believe that the SO should publish a forward plan before the start of each financial year. This plan should look ahead as far as realistically possible, and clearly outline how any steps proposed during the following year would work towards its longer-term goals and objectives. We think that this process will help to align expectations and ensure that the SO's plans effectively use stakeholders' expertise and knowledge.

1.15. It is vital that through this process the SO engages effectively with a wide array of stakeholders, including smaller and potential new industry parties. In particular, it is important that the SO's plans promote a level playing field, and ultimately align with consumers' interests. We are keen to hear views from the SO and industry about the best way of ensuring this is the case.

1.16. In order to help track the SO's performance in meeting its principles and forward plan, we propose introducing a transparent set of key performance indicators (KPIs) for the SO. We think that we should develop these KPIs in parallel to the SO's engagement around its forward plan, feeding in the views put forward by stakeholders during that process. We would then make a final decision on KPIs after the publication of the SO's forward plan but prior to the start of the financial year. An illustration of the potential annual cycle under our proposed model is in Figure 2. We welcome stakeholders' views on how we can appropriately streamline this process in order to minimise unnecessary burden.

1.17. One of our key objectives for the future framework is that it encourages the SO to seek measures that unlock longer-term benefits for consumers. Where possible, we would therefore like to fix KPIs for multiple years to help create more certainty for the SO and stakeholders. However, uncertainty about how the system will evolve could make identifying appropriate future counterfactuals challenging in some areas. We therefore welcome views on how we can address this challenge. And in particular, whether or not annually recalibrated KPIs could be compatible with a framework that encourages the SO to think well beyond the within-year stage.

1.18. We expect the nature of the KPIs associated with each principle to vary. In some areas, it may be possible to use system data or modelling; whilst in others, we may need to rely more on coordinated stakeholder feedback (for example, through stakeholder survey scores). Where data-led KPIs are not possible, we intend to set clear up front criteria on how performance would be judged. The onus would then be on the SO to explain and justify how it has acted in line with its principles in response to challenges from us and the wider industry.

1.19. We intend to develop the details of the KPIs applicable from 1 April 2018 in conjunction with stakeholders, following this working paper.

C) Monitoring, reporting and external involvement

1.20. The third aspect of the framework is how we monitor and report on the SO's performance, including the role that different parties have in this process.

1.21. Respondents to our consultations strongly supported more regular and coordinated reporting on the SO's performance. We believe that the KPIs agreed at the start of the year should be published as regularly as possible to support transparency and create strong reputational incentives on the SO to perform well across *all* of its roles. We also think there could be an end of year report, which would examine the SO's overall performance across its principles.

1.22. Stakeholders also supported our suggestion for a greater role for external parties in the future SO regulatory framework. We strongly believe that the customers of regulated monopolies and their wider stakeholders should play a key part in holding these organisations to account. And as the regulator, we think that we can make better use of the knowledge held by industry and external parties to help bridge the inherent information asymmetry between ourselves and the SO. Greater transparency and external involvement should also help build more trust in the regulatory framework, helping to make it more sustainable.

1.23. We have identified three particular areas where we believe more external involvement would be beneficial:

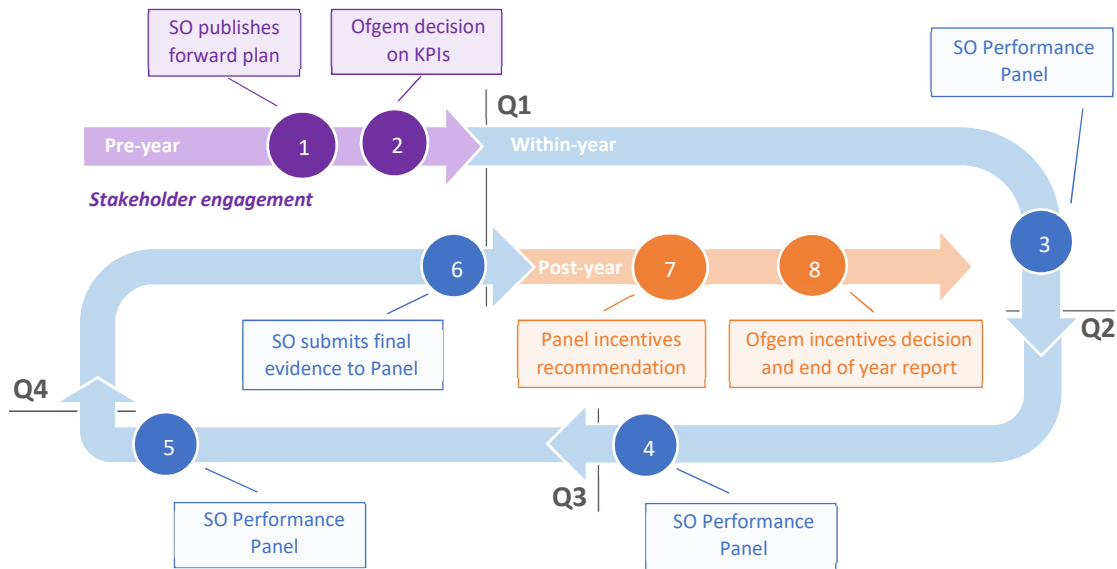
- **Providing challenge** – pooling knowledge and experience to more comprehensively challenge the SO on its performance
- **Decision making** – helping to ensure robust decisions, particularly in areas where performance is harder to measure or more subjective
- **Quality assurance** – building trust in any complex analysis or modelling used for KPIs through independent quality assurance or ownership

1.24. We think that a new 'SO performance panel' - which could be made up of a diverse mix of independent experts and/or industry representatives – could play a role in the first area in particular. We believe that requiring the SO to regularly present to this panel (for example, every quarter) to explain and justify its performance against its KPIs could create strong reputational incentives.

1.25. This panel could also potentially have additional roles in our framework. For example, as the panel would be responsible for challenging the SO on its performance against KPIs, it may be sensible for it to either review these KPIs or develop them in the first place. Additionally, the panel could make recommendations to us to inform key decisions on incentives.

1.26. We recognise that the design and make-up of this panel would be very important, as it could potentially have a large influence on outcomes. In particular, it would be vital that any panel decisions are well informed and impartial. We have been reviewing the performance of existing panels to understand what lessons we can learn, and we are keen discuss with stakeholders how a panel could be used and designed effectively.

Figure 2: An example annual cycle under our proposed regulatory framework



D) Financial incentives

1.27. The final aspect of our framework is how we use financial incentives. We believe financial incentives can have a strong influence on the SO’s behaviour. In particular, well-designed financial incentives can encourage the SO to innovate and drive continued improvements in its performance.

1.28. Stakeholders broadly supported the use of financial incentives on the SO in future. However, many stressed the importance of taking a careful approach to their design in order to avoid unintended consequences. In particular, a number saw finalising the SO’s roles and being clear about the levers it has to influence outcomes as an important first step. A majority of respondents also felt that future incentives may need to be more flexible and better able to cope with uncertainty.

1.29. We think that financial incentives will have an important role in driving the SO’s performance in future. However, we think that there is a need to change these incentives to ensure that they are consistent with the SO’s evolving roles. We agree with stakeholders that it is vital to think carefully about the design of any future financial incentives. This is particularly because, as the SO’s role evolves, it becomes increasingly challenging to design an incentives package that successfully captures

the complex trade-offs between different actions and aligns with consumers' overall interests.

1.30. One of our key challenges with future financial incentives is ensuring they work together as a coherent package. We need to avoid a situation where a mix of distinct incentives unintentionally undermines SO decision-making. For example, by encouraging the SO to inefficiently prioritise actions where they believe incentives are easier to outperform and deprioritising ones with less potential for a reward.

1.31. One solution could be to temper the overall value of incentive payments according to the SO's performance in the worst performing area – this would mean that the SO would need to perform well against all its incentives to unlock higher rewards. Another option is to use a single, more holistic incentive approach. This could provide a single reward to the SO based on a fuller assessment of its performance against all of its principles. This could be underpinned by a balanced scorecard of KPIs, evidence from the SO and stakeholder and/or panel feedback. We are keen to engage with stakeholders to develop and assess these ideas further.

1.32. Another key challenge is ensuring that our incentives encourage the SO to take a longer-term view. Many of the steps we expect the SO to take in order to drive significant consumer benefits may only see savings that materialise several years after they are initiated. The framework therefore needs to give the SO comfort that it will not be penalised for incurring well-justified short-term costs in order to achieve longer-term consumer benefits. At the same time, there needs to be the same level of incentive on the SO to successfully deliver innovative new initiatives, as there is to come up with them in the first place. Where possible it would therefore be good to structure incentives in a way that rewards the SO over time, based on the successful delivery of new, innovative ideas.

1.33. The rapid transformation of our system and future uncertainty makes designing longer-term incentives for the SO a challenge. This is because establishing appropriate future counterfactuals could be particularly difficult in many areas. We therefore agree with stakeholders that we may need to try approaches that are more flexible.

1.34. Whilst more 'mechanistic' incentives (eg where a reward or penalty is directly determined by outturn data against a target) can create more certainty for the SO and therefore arguably can have a stronger incentive effect, there is also a greater chance of unintended consequences – particularly when trying to set these incentives for longer periods. Through developing overly mechanistic incentives, there is also a risk that we introduce too much prescription about the actions the SO should take. This could go against our ambition for a SO that takes ownership of system outcomes and proactively considers the best *overall* solutions for consumers.

1.35. It may therefore be more effective to use less mechanistic and more holistic incentive approaches. For example, by making a decision on a reward/penalty for the SO at the end of the year based on up-front criteria, a range of different KPIs and potentially a recommendation from an expert panel.

1.36. In order to help with our design of incentives, we have developed a set of criteria shown in Box 1. We recognise that it may not be possible to perfectly meet these criteria – instead, they are intended to be a guide to help us evaluate the merits of different options.

Box 1: Criteria for financial incentives 2018-2021

Objectives for the overall incentive package

We think future incentives should encourage the SO to find the best overall actions for consumers and:

- make efficient trade-offs between different actions, according to their relative value to consumers
- strike the appropriate balance between short term and long term outcomes
- innovate and take measured risks
- work closely with its stakeholders, including other network operators, and take on responsibilities in the areas it is best placed to

Design criteria for the 'ideal incentive'

- a) **Aligned with performance:** should be on outcomes that the SO can influence, targeted at behaviours that go beyond baseline expectations, and should not subsequently penalise the SO decisions made in line with its principles.
- b) **Transparent:** the incentive's objectives and mechanics should be clear to all parties.
- c) **Able to cope with change:** should be able to cope with the future uncertainty in the energy system, avoid unintended consequences and avoid 'locking-in' a signal for behaviours that are not in consumers' best interests.
- d) **Provide certainty:** should create an appropriate level of certainty for the SO and stakeholders.
- e) **Output-focussed:** should not be overly prescriptive on how the SO should best achieve its principles.
- f) **Well governed:** should create a SO focus on consumer outcomes, not the details of incentives. It should not give the SO an inappropriate level of control over incentive mechanics and it should facilitate wider industry scrutiny and input.
- g) **Proportionate burden:** should avoid unnecessary administrative burden.

Interactions with the RIIO price controls

1.37. RIIO (Revenue=Incentives+ Innovation+Outputs) is our framework for setting price controls for network companies. The RIIO-T1 price control sets out the outputs that the electricity transmission network companies need to deliver for their consumers, and the associated revenues they are allowed to collect, for the eight-year period from 1 April 2013 until 31 March 2021. Some key aspects of the current SO regulatory framework are contained within National Grid's RIIO-T1 price control.

1.38. As set out in our initial consultations, we are not re-opening the RIIO-T1 price control as part of our changes to the SO framework. We are therefore not introducing changes to the way we regulate the SO's internal operating costs or

altering its regulated rate of return during this price control period. Instead, we are considering how changes to the 2018-2021 SO regulatory framework can interact effectively with and complement the RIIO-T1 price control, whilst also driving improvements in the SO's performance.

1.39. Alongside developing shorter-term changes from 1 April 2018, we are considering what a consolidated SO regulatory scheme could look like from 2021 onwards. We believe that bringing all aspects of the current SO regulatory framework⁴ together in future would create a more transparent and coordinated framework to the benefit of consumers. We will need to consider the best way of financing and incentivising the SO from 2021 onwards, and specifically, whether we should establish a separate price control under the RIIO framework.

1.40. In any case, a key consideration for the future SO scheme will be how it interacts with the second set of RIIO price controls for transmission and distribution network companies. It is vital that all these regulatory regimes interact effectively to ensure all parties work together to deliver efficient whole system outcomes.

Internal funding for Future Role of the SO

1.41. We are currently considering National Grid's proposed costs of its Future Role of the SO work programme. In doing so our objective is to ensure that funding for specific tasks or roles will only be given once. If a role already exists then no additional funding will be given over and above the agreed allowances under the RIIO T1 price control. Moreover, any additional costs need to be shown to be efficient. We expect the SO to demonstrate that there is no double counting, that any additional funding being requested is incremental, and to make best use of existing resources as well as where possible make savings over time.

⁴ Please see Chapter 2 of 'Future arrangements for the electricity System Operator: the regulatory and incentives Framework', for a high level overview of the current SO regulatory framework, including the parts captured by the RIIO-T1 price control:
https://www.ofgem.gov.uk/system/files/docs/2017/02/future_arrangements_for_the_so_-_the_regulatory_and_incentives_framework_0.pdf

2. SO Roles and Principles

Introduction

2.1. The purpose of this chapter is to provide further explanation of the SO's roles and principles, which we introduced in Chapter 1. The roles and principles are underpinned by the SO's binding licence obligations – particularly the recent modifications to the C16 licence condition.

2.2. This chapter also provides guidance on the behaviours or outputs we expect to see when the SO fulfils its roles. Such guidance should be considered as providing a non-exhaustive list of examples of how we currently envisage the SO to fulfil its roles when undertaking day to day actions to operate and balance the GB transmission system.

2.3. There is also guidance as to what we expect to see as evidence of the SO's compliance with its obligations under Standard Licence Condition C16 set out in Appendix 2⁵. This appendix maps the guidance in this chapter directly to the C16 text. The guidance 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 obligations⁶. This guidance relating to compliance with C16 will have effect, and compliance with it may be taken into account, from the date of its issue 11 July 2017. In the event that the SO does not meet its licence obligations it may be found to be non-compliant. 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.

2.4. We expect that many of the existing licence obligations will form part of the future regulatory framework and therefore this guidance will apply until stated otherwise. Nevertheless, it will be kept under review and updated when necessary. For example, in further developing our plans for the SO's regulatory framework we may consider further modifications to the SO's licence obligations.

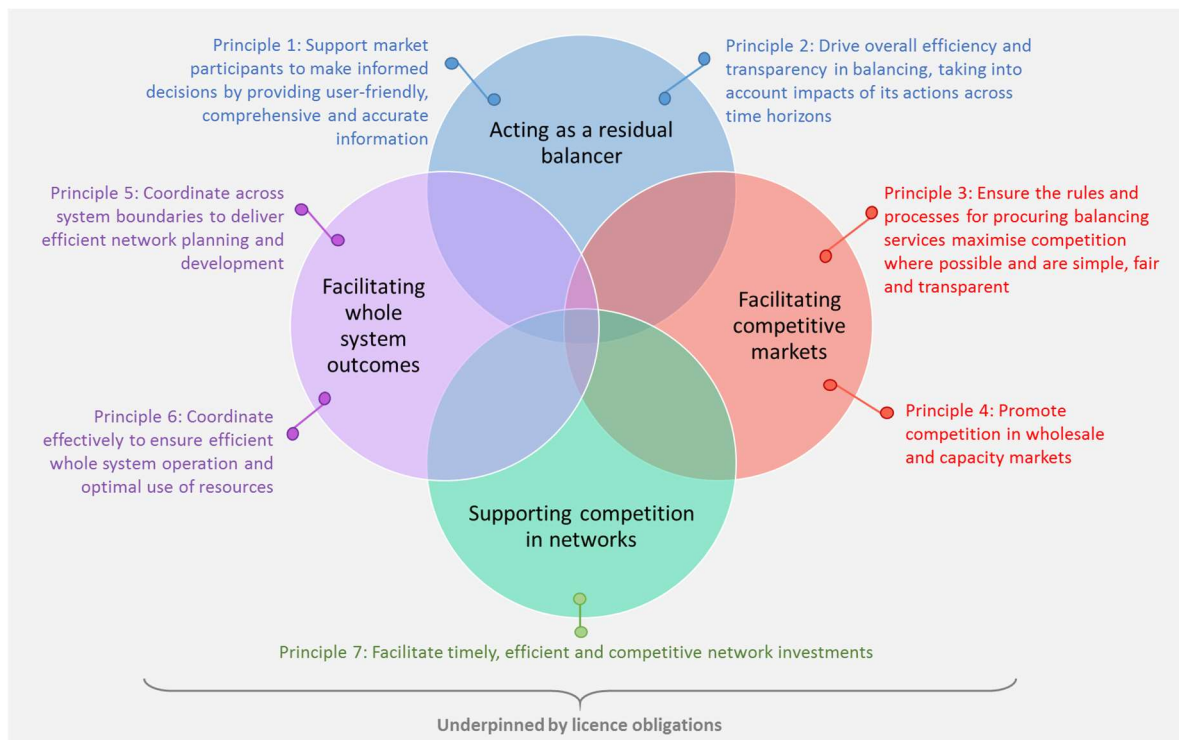
SO roles and principles

⁵ We also plan to clarify obligations on DSOs and TOs as a future follow on from this document and our work on a Smart Flexible Energy System.

⁶ All decisions taken by the Authority relating to enforcement matters are subject to its [Enforcement Guidelines](#) and [Penalty Policy](#).

2.5. In the rest of this chapter we set out further details of the four roles we envisage for the SO. Throughout all of these roles are the cross-cutting themes of ensuring the SO provides most value to consumers (ie, protecting consumers from undue costs), 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 have a large degree of overlap and interaction. Alongside the roles are the principles and predominant legal obligations underpinning these. The principles are drafted with a high level of generality, with the intention that they should be considered as overarching requirements or behavioural standards that can be applied flexibly to a rapidly changing electricity industry. The SO's licence conditions underpin the roles and principles and provide the legal obligations that the SO must fulfil.

Figure 3: SO roles and principles



Role 1: Acting as a residual balancer

2.6. In order to act as a residual balancer, we believe the SO should be helping the market to balance the system as much as possible (under principle 1) and where it does need to step in to take any actions as residual balancer to secure the transmission system (under principle 2) it should be considering impacts across time horizons to ensure the actions it does take drive overall efficiency.

Principle 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

2.7. 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 SO therefore plays a critical role as a residual balancer, taking actions to keep the system frequency stable when the market is unable to balance.

2.8. Therefore, the overall efficiency of system balancing includes both the costs incurred by the SO as a residual balancer and the costs incurred by market participants to balance their positions. We expect the SO to support the market to self-balance where possible, thereby minimising the SO's own role as residual balancer.

2.9. We think the SO should publish any relevant information it has that would help market participants to balance their own positions. We think this would reduce the natural asymmetry of information between the SO and other market participants and provide market participants with the tools they need to make informed decisions. We also think the SO 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 SO's role as a residual balancer.

2.10. In general, we think the information the SO collates and provides to the market should be:

- **User-friendly** - the SO 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 SO should ensure that the information it provides on its website can be easily accessed and understood by market participants. For instance the SO 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 SO 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 SO should respond and communicate this for clarity. For instance, the SO could consider creating a publicly available process for stakeholders to propose changes or additions to the information published by the SO. The SO could evidence how it has taken into consideration any such requests including explanations for withholding any requested information. The SO may wish to include this information as part of its regular performance reporting.
- **Accurate** - the SO 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 unbiased⁷. Inaccurate system forecasts can create uncertainty and risk for the SO 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 SO 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.

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

Predominantly underpinned by licence conditions:

C16 1(a) Taking the most efficient actions to balance the transmission system based

⁷ 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.

Refer to appendix 2 for more information.

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

2.11. The SO is required to operate the transmission system safely and securely in real time. In doing so, the SO plays a critical role, taking actions to keep the system frequency stable when the market is unable to balance. The SO is also responsible for taking balancing actions on different parts of the transmission network to deal with system issues and constraints. The SO 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 SO to do this as efficiently as possible, it should be taking the most economic action that solves the system's balancing need.

2.12. To date we think that there has been too much focus on short-term reductions in balancing costs regarding the development of balancing markets. This has been at the expense of longer-term considerations, which may realise greater cost savings in the future. Therefore, we would like to see the SO thinking across time horizons and taking a strategic approach to drive overall efficiency in balancing processes.

2.13. In order to drive overall efficiency in balancing processes, we think the SO should consider the following when making any decisions on balancing. Firstly, the SO should be planning for future energy market scenarios and pre-empting future energy needs. Specifically the SO should be taking a risk-based approach to plan and mitigate against any adverse market conditions that might be expected to arise in the future. The SO 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 SO may require in the future.

2.14. Secondly, the SO 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 in the medium to longer term.

2.15. In order to demonstrate compliance with this principle, the SO should consider developing and applying a clear and transparent internal 'decision framework' that would take into account point 2.13 and 2.14 above. We would expect the SO to use this decision framework to set out the types of analysis that will be used to derive the optimal procurement strategy for balancing and ancillary services (for example, the volume of services procured closer to real-time or further in advance).

2.16. The SO may wish to refer to this framework and detail its development and application as part of the SO's regular performance reporting. We expect the SO to remain transparent and, if requested by the Authority, show clear documentation

and justification of any decisions taken, especially any decisions taken outside of this framework. The SO 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 SO 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.

Role 2: Facilitating competitive markets

2.17. We expect the SO to be encouraging and facilitating competition in all markets that it can affect. In particular, principle 3 covers the balancing and ancillary services markets where the SO is the lead and principal buyer and principle 4 covers the remaining markets that the SO can affect (ie, wholesale and capacity markets).

Principle 3: 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

2.18. As mentioned previously, in addition to running the BM, the SO 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.

2.19. Although the SO's approach to procuring balancing services must follow the high level framework set out in the Transmission Licence C16 statements⁸ (which we

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

approve each year), it has significant scope and flexibility in the design of these services.

2.20. We think the SO 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 SO should procure ancillary services competitively to maximise inclusiveness and to ensure open and fair competition wherever possible. Examples of optimal market-based structures the SO could consider include tenders or auctions. Where there is currently insufficient competition for market-based approaches, the SO should consider what steps should be taken to develop a market for that service in the future. Where the SO 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 SO 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 SO should also ensure it is sending clear price signals in order to procure an efficient mix of balancing providers.
- **Fair:** the SO 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 SO should consider regularly reviewing technical requirements to ensure they remain fair, providing a justification to the market wherever they are used. The SO could also consider creating a publicly available process by which potential new and existing balancing service providers may test any existing restrictions (ie to pitch for their product). The SO 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. It is the SO'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 SO should communicate its expected procurement needs to the market, giving the market as much notice as possible. The SO 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 SO's choice of procurement methods/activities. For instance, the SO 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 SO isn't able to publish this information, it should justify why that information is being kept from the public domain.

2.21. We think the SO could achieve 2.20 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 SO to follow this approach for each contract entered into. If requested by the Authority, the SO should be able to show clear documentation and if necessary justification of any deviation from this approach.

Principle 4: 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

2.22. In addition to running the BM and procuring ancillary services, the SO also has a number of additional roles outside of direct balancing. In particular, the SO is a party to the Balancing and Settlement Code (BSC), and also has a fixed representative on the BSC Panel. The SO 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 SO 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).

2.23. In order to facilitate competitive markets, we believe the SO 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 SO to play an active role in ensuring the code arrangements named under 2.22 promote competition. We expect the SO 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.

2.24. We believe the SO 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.

2.25. For all interactions the SO has with market arrangements, we expect the SO 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 SO 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 SO 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.

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

Role 3: Facilitating whole system outcomes

2.27. It is important for the SO to coordinate effectively with other parties to deliver the most efficient and economic outcomes for the whole system⁹. This includes coordinating with others across network boundaries when undertaking network planning and development (principle 5) and coordinating with others in ensuring efficient whole system operation and optimal use of resources (principle 6). Network planning and system operation remain highly interlinked and SO processes must reflect this.

Principle 5: 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(d) Optimising the timing of transmission outages under the outage plan on the national electricity transmission

C16 1(e) Publishing information which the licensee holds to enable electricity market

⁹ Also referred to elsewhere as 'total system'. 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.

participants to make efficient operational and investment decisions

2.28. We expect the SO 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 SO to participate in, and drive forward, industry-wide processes (and encourage other parties to do so).

2.29. 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 SO and other regulated network companies to consider how procuring solutions from one and other could lead to minimising costs and maximising consumer benefits across the whole system.

2.30. In identifying the most efficient network planning and development solutions, we expect the SO 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.

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

2.32. In addition, in undertaking its current role as the manager and gatekeeper of transmission system outages we expect the SO to optimise the timing of transmission outages to maximise efficiencies across the system as a whole.

Principle 6: Coordinate effectively to ensure efficient whole 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

2.33. We expect the SO to take a whole system perspective in operating the transmission network. In doing so, the SO should participate in, and drive forward, industry-wide processes (and encourage other parties to do so) to clearly define roles and procedures that ensure appropriate optimisation, dispatch and monitoring of resources connected across the system.

2.34. The SO should work with other network operators to build a common understanding of where actions taken by one system/network operator could have cross-network impacts (both positive and negative). This may include sharing operational information and developing processes to ensure each party takes operational actions which are consistent with whole system efficiency.

2.35. The whole system approach should provide the SO with opportunities to exploit synergies or mutually beneficial operational decisions across transmission and distribution voltage levels. We therefore expect the SO to work with other network operators to identify instances where a single action, for example, could address constraints on both the transmission and distribution networks. Once identified, the SO should coordinate with other network operators to optimise these synergies and therefore maximise consumer benefits.

2.36. We expect the SO 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.

Role 4: Supporting competition in networks

Principle 7: Facilitate timely, efficient and competitive network investments

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

Concluding ITPR licence changes to enhance the role of the SO - https://www.ofgem.gov.uk/sites/default/files/docs/2015/09/itpr_decision_cover_letter_0.pdf

2.37. 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 the design, financing, construction and operation of transmission infrastructure.

2.38. The SO should use the Network Options Assessment¹⁰ (NOA) to identify long-term electricity system needs, develop and assess options to meet these needs and assess whether projects meet the criteria for competitive delivery. As part of this, we expect the SO to demonstrate that it has undertaken a thorough assessment of possible options. This may include, but not be limited to, proposing innovative solutions not brought forward by TOs, proposing alternative build solutions, and coordinating cross-regional solutions, and driving the early development of these solutions. We consider that the SO should take a more proactive and holistic approach to system planning, in line with the original intentions of our ITPR project, to facilitate timely and efficient network development.

2.39. We have previously proposed specific additional roles for the SO to support our proposed Competitively Appointed Transmission Owner (CATO) model for competitive delivery. In particular these have been 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 competitive tender criteria and are due to be constructed in the RIIO-T2 period and beyond. We have been working with Government to introduce relevant legislation in order to implement the CATO regime. As noted in our recent open letter,¹¹ the Queen's

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/>

¹¹ Update on Extending Competition in Transmission (June 27th 2017)

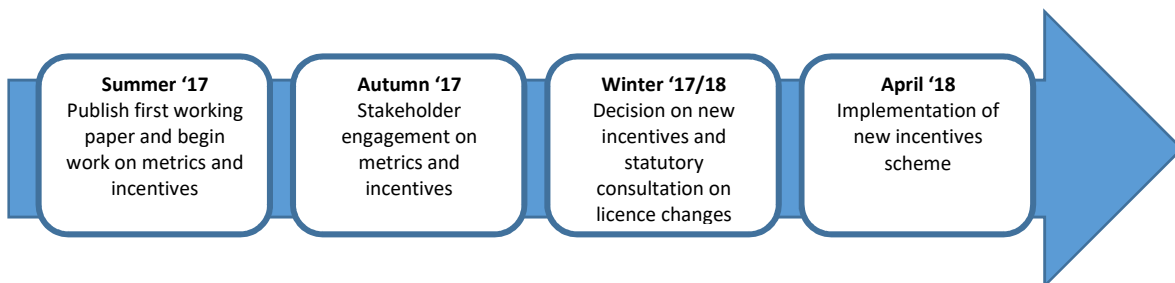
Speech set out that legislation related to EU exit will likely dominate the Parliamentary timetable, so an opportunity to introduce this legislation in the immediate future currently looks unlikely. We will take forward further development of the CATO regime (and the next iteration of CATO policy) once there is greater clarity on the timing of the enabling legislation. 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 SO should support future delivery models, eg through its role in the NOA, as well as through information provision.

https://www.ofgem.gov.uk/system/files/docs/2017/06/update_on_extending_competition_in_transmission.pdf

3. Next steps

3.1. Our timelines are built on having a new SO incentives scheme in place for April 2018. This requires a final decision on the regulatory framework and launching a statutory consultation on necessary licence changes before the end of December 2017. To meet this timeline, our immediate next steps are to build on the framework outlined in this working paper in order to develop initial options for SO performance metrics and financial incentives.

Figure 4: Key milestones for Future SO Regulatory Framework



3.2. It is essential that stakeholders understand our policy intent and view the SO's regulatory framework as transparent and joined-up. We will therefore continue to engage with stakeholders throughout its development. In the next stage of our work, once we have developed options for SO performance metrics and financial incentives we intend to share these with stakeholders and hold workshops to road test our designs.

Appendices

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Appendix 1 – Recent modifications to Standard Licence Condition C16

In April 2017 we modified Standard Licence Condition C16 (Procurement and use of balancing services) for all electricity transmission licences.¹² The aim of the modification was to provide greater clarity to National Grid Electricity Transmission plc, in its role as system operator, on the obligations placed on it under the licence when co-ordinating and directing the flow of electricity onto and over the national electricity transmission system. The decision took effect from 1 June 2017.

Figure 5: Overview of relevant changes (in red) to standard licence condition C16

1. The licensee shall co-ordinate and direct the flow of electricity onto and over the national electricity transmission system in an efficient, economic and coordinated manner. This includes but is not be limited to the following:
a) taking the most efficient actions to balance the national electricity transmission system based on the information the licensee had at the time; and
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: <ul style="list-style-type: none">(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:<ul style="list-style-type: none">(aa) wholesale electricity market price signals;(bb) the behaviour of electricity market participants; and(cc) the efficiency of the national electricity transmission system;
c) considering the impact any action would have on the total system;
d) optimising the timing of transmission outages under the outage plan on the national electricity transmission system;
e) publishing information which the licensee holds to enable electricity market participants to make efficient operational and investment decisions;
f) producing and publishing accurate and unbiased forecasts of: <ul style="list-style-type: none">(i) indicated margin;(ii) demand;(iii) wind generation output; and(iv) balancing costs;

¹² https://www.ofgem.gov.uk/system/files/docs/2017/04/so_incentives_-_decision_standard_licence_conditions_0.pdf

- g)** ensuring the procurement of balancing services is transparent;
- h)** ensuring that the technical requirements of balancing services do not restrict new and existing balancing service providers from competing in those services; and
- 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.

Appendix 2 – Mapping the guidance to Standard Licence Condition C16

The table below is intended to support the SO's interpretation of the guidance in Chapter 2 through mapping it directly to the recent relevant C16 licence modifications. In Chapter 2, 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 6 also maps the different aspects of the modified C16 licence conditions to the principles and 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; and*

We expect the SO 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 SO. However, in making this assessment we expect the SO 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 2.12, 2.13, 2.14, 2.15, 2.16 under principle 2 and paragraphs 2.34, 2.35, 2.36 under principle 6.

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:***
 - (aa) *wholesale electricity market price signals;***
 - (bb) *the behaviour of electricity market participants; and***
 - (cc) *the efficiency of the national electricity transmission system;***

The SO's balancing actions may have impacts on competition in the wholesale market and wider consequences for the whole electricity system. We expect the SO 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 2.12, 2.13, 2.14, 2.15, 2.16 under principle 2 and paragraphs 2.34, 2.35, 2.36 under principle 6.

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

We expect the SO 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 2.28, 2.29, 2.30, 2.31 under principle 5 and paragraphs 2.33, 2.34, 2.35 and 2.36 under principle 6.

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

When planning transmission outages the SO 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. This should involve engaging with other network operators when developing plans.

For further details, refer to paragraphs 2.31 and 2.32 under principle 5.

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 SO and market participants, we expect the SO to engage with market participants to understand which information they would like (and the format and frequency they require). We expect the SO 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 SO.

For further details refer to paragraphs 2.9 and 2.10 under principle 1, paragraphs 2.20 and 2.21 under principle 3, paragraph 2.25 under principle 4, paragraph 2.30 under principle 5, paragraphs 2.34 and 2.36 under principle 6 and paragraph 2.39 under principle 7.

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 SO 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 SO 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 (eg 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 2.9 and 2.10 under principle 1.

g) ensuring the procurement of balancing services is transparent;

We expect the SO 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 SO 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 SO's procurement methods and activities.

For further details, refer to paragraphs 2.20 and 2.21 under principle 3.

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

We expect the SO to remain technology neutral and create a level playing field for different service providers (old and new) to compete. We think the SO 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 2.20 and 2.21 under principle 3.

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 SO should be thinking about where it can deploy competitive

approaches (eg tenders and auctions) when it is taking actions inside and outside the Balancing Mechanism (BM). The SO should be anticipating future system trends/needs by collating as much information as possible.

More generally, the SO 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 2.10 under principle 1, paragraphs 2.20, 2.21 under principle 3 and paragraphs 2.23, 2.24, 2.25 and 2.26 under principle 4.

Figure 6: Mapping licence obligations to principles and roles

