

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

Consultation

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Overview:

The electricity System Operator (SO) has a key role in our electricity system. Its actions have a significant impact on both short and long run system costs. We regulate the SO to help ensure its actions are aligned with the interests of consumers. Where appropriate, we use incentives to encourage the SO to innovate and drive continuous improvements in its performance.

On 12 January we published a consultation on the future arrangements for the SO. In this consultation we highlighted our belief that the SO's role needs to evolve, to ensure it is well placed to both respond to and help facilitate the transformation of the electricity system over the coming decades. We also set out our view that further separation between National Grid's SO and electricity transmission network functions would be in the interest of consumers.

This document launches our review of how the SO regulatory framework can be designed to ensure the SO delivers the best possible outcomes for consumers under its proposed future role and structure. We expect to first introduce changes to this framework from April 2018 onwards.

This consultation should be read alongside our consultation the 'Future arrangements for the electricity System Operator: its role and structure' published on our website. The deadline for responding to both consultations is the 10 March and we'd be pleased to receive joint responses.

Context

National Grid Electricity Transmission plc (NGET) is the System Operator (SO) for the electricity transmission network in Great Britain. As such it is responsible for the day-to-day operation of the system. Different parts of the GB transmission network are owned by different Transmission Owners (TOs). In addition to its SO role, NGET is the TO for England and Wales.

The role of the SO has grown over the years and it now has a more active role in transmission network development and the capacity market. Its role is continuing to evolve. The SO is expected to take on new functions to support the introduction of competition for onshore transmission assets.

The changing nature of generation, particularly the increase in small generation connected at the distribution level, is highlighting the need for a more holistic and coordinated approach to planning and operating the transmission and distribution systems. The increase in new sources of flexibility also means there is a need for the SO to review how it procures these services.

On 12 January we published a consultation on the future role and structure of the SO. We believe the SO's role needs to evolve further to ensure it is well placed to both respond to and facilitate the transformation of the electricity system. We also think that further separation between National Grid's electricity SO and electricity TO functions would be in the interest of consumers. We're proposing that the SO should be a separate company with its own specific licence by April 2019.

We now need to consider what these changes mean for the future SO regulatory framework, including how we can use and design incentives to help ensure the SO performs its future roles in the energy system as well as possible.

Associated documents

Future of the SO

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 and proposed schemes

Electricity System Operator Incentives Final Proposals 2015-17:

<https://www.ofgem.gov.uk/publications-and-updates/electricity-system-operator-incentives-2015-17-final-proposals>

RIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas – Overview:

<https://www.ofgem.gov.uk/publications-and-updates/rio-t1-final-proposals-national-grid-electricity-transmission-and-national-grid-gas-%E2%80%93-overview>

Decision on revenue, outputs and incentives for National Grid Electricity Transmission plc's roles in Electricity Market Reform:

https://www.ofgem.gov.uk/sites/default/files/docs/2015/09/decision_on_revenue_outputs_and_incentives_for_nget_plcs_roles_in_electricity_market_reform_0.pdf

Electricity System Operator incentives from April 2017:

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

Initial Proposals for Electricity System Operator incentives from April 2017:

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

Links to other work areas

Smart, Flexible Energy System – a call for evidence:

<https://www.ofgem.gov.uk/publications-and-updates/smart-flexible-energy-systemcall-evidence>

Extending competition in electricity transmission: arrangements to introduce onshore tenders:

<https://www.ofgem.gov.uk/publications-and-updates/extendingcompetition-electricity-transmission-proposed-arrangements-introduce-onshoretenders>

Integrated Transmission Planning and Regulation:

<https://www.ofgem.gov.uk/electricity/transmission-networks/integrated-transmission-planning-and-regulation>

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Executive Summary

The electricity System Operator (SO) has a key role in planning and operating the electricity system. Its actions have a significant impact on system costs in both the short and long run. As the SO is a monopoly business, we regulate it to ensure it acts in the interest of consumers. The SO role is currently carried out by National Grid Electricity Transmission (NGET), which is also the owner of the transmission network in England and Wales.

The role of the SO has evolved over time. On 12 January, we published a consultation on the future arrangements for the electricity SO. In this consultation we set out our belief that the SO's role need to evolve further to ensure it is well placed to both respond to and facilitate the transformation of the electricity system. We also stated our belief that change is needed to the structure of the SO to mitigate conflicts of interest. We're proposing that the SO should be a separate company with its own specific licence by April 2019.

Our future aims for the SO regulatory framework

This consultation document (which should be read alongside our 12 January consultation) seeks views on how we can support these changes through the design of our SO regulatory framework. Our objectives are to introduce an approach which:

- Drives SO behaviour which maximises the efficiency of the *whole* electricity system *both now and in the future*, in particular by facilitating greater competition in markets and by supporting efficient trade-offs between operational and investment costs;
- Provides stakeholders with confidence that the SO is acting in the best interests of consumers and the system, and gives them a platform to hold it to account;
- Creates risks and rewards for the SO which are proportionate and aligned with its performance, which support balanced decision-making, and which encourage it to innovate and seek actions which drive long term benefits;
- Gives the SO sufficient flexibility to find the best approaches to driving positive system outcomes (including by working closely with network operators and market participants);
- Is transparent, brings different aspects of the framework together, and avoids unnecessary administrative burden.

Achieving these objectives is likely to need a series of progressive steps. Creating a more coherent, less fragmented framework means that the end of the current transmission price controls in April 2021 is an important date. However, there are opportunities to consolidate and improve parts of the framework before then, starting from April 2018. We will also need to align our approaches with the changes in the structure of the SO which are likely to be introduced by April 2019. This consultation is therefore intended to help us consider how to set an appropriate regulatory framework for the SO from April 2018 and beyond. We are seeking views on how we should plan the timing of future changes in order to meet our objectives.

The current SO regulatory framework

A key aspect of the current framework is the suite of obligations and requirements placed on the SO in primary legislation, NGET's licence and supporting codes and methodologies. Where appropriate, we also use incentive mechanisms to encourage the SO to seek continuous improvements and drive benefits for consumers. These incentives are currently split across three different schemes: the RIIO-T1 price control, our SO incentives scheme and the EMR Delivery Body incentives.

Review of the current framework

We are reviewing the current regulatory framework to see what lessons we can learn for the design of our future framework. At this stage we have put a particular focus on the approach to incentivising balancing costs. This is because our approach to regulating these costs is likely to be one of the key aspects of the framework we will face a decision on from April 2018. However, we are interested in views on lessons learned from all areas.

Future framework design

We are considering what combination of clear obligations and enforcement, incentives (both financial and non-financial) and good governance will be able to ensure the SO maximises consumer benefits across each of its different roles. We believe we may need to provide additional clarity on what we expect from the SO under its obligations, potentially through clearer licence drafting or guidance. However, we also recognise that overly prescriptive regulations risk reducing SO flexibility, innovation and its ability to adapt to respond to change. We are therefore interested in views on the use of a 'principles-based' approach to SO regulation.

Across all of the SO's future roles, we are considering which areas supplementing the SO's obligations with incentives would benefit consumers. There a range of ways to design incentives and we are seeking views on which approaches we should use. For example, we are considering the benefits of introducing a formal set of Key Performance Indicators on the SO to help drive its performance.

Finally, we think questions around incentive governance should be a key part of our review. We are seeking views and suggestions on ways to improve incentive governance. In particular, whether there could be more external involvement in incentives through independent auditing and quality assurance processes, expert panels and a more formal role for industry. We also see greater transparency and more easily accessible data on incentive performance as crucial to good governance.

Next Steps

We intend to work closely with stakeholders in developing the future framework. We would appreciate joint written responses to this consultation, and our parallel consultation on the SO's future role and structure, by 10 March 2017. We then aim to publish proposals on changes to the regulatory framework in the summer (likely with a particular focus on changes from April 2018), alongside our final decision on the SO's future roles. We plan to issue a statutory consultation on these changes in early 2018.

1. Background and objectives

Chapter Summary

The System Operator (SO) has a vital role in our electricity system. We recently published a consultation setting out our belief that the SO's role needs to evolve to help facilitate the transformation of the system, and that this should be accompanied by changes to the SO's structure. This document launches our review of how we can support these changes through the design of our SO regulatory framework. We have a number of objectives for the future framework. We are seeking views on how we can plan the timing of changes to the framework to meet our future objectives.

Question box

Q1: Do you agree with our objectives for the future SO regulatory framework? Are there any missing?

Q2: How can we best transition to a SO regulatory framework which meets these objectives? When should changes be made?

Evolution of the electricity System Operator

1.1. Over 65% of a consumer's annual electricity bill is made up of the costs associated with producing electricity, trading it in our wholesale market and transporting it over our electricity networks. The electricity SO sits at the centre of this electricity system and it can have a significant impact on the way the system operates and evolves over time. The SO role is currently carried out by National Grid Electricity Transmission (NGET), which is also the owner of the transmission network in England and Wales. NGET is part of the wider National Grid plc group (NG Group).

1.2. The SO has a number of different roles. It is responsible for balancing the electricity system by ensuring that supply on the national electricity grid matches demand on a second by second basis. To do this, the SO buys and sells energy in the Balancing Mechanism (BM) and procures associated balancing services. It also provides information to market participants, such as forecasts of demand and supply.

1.3. The SO is the main customer interface for the transmission connected users of the electricity system (i.e. generators, distribution network operators and large demand users). It is responsible for dealing with parties seeking connection to the system and for collecting use of system charges on behalf of transmission owners. It also has a central role on the governance of industry codes.

1.4. In recent years the SO has become responsible for delivering and administering key aspects of the government's Electricity Market Reform (EMR). It has also been given a more active role in network planning following our Integrated Transmission Planning and Reregulation (ITPR) project. Each of these new roles resulted in stronger measures to mitigate conflicts of interest associated with NGET having both SO and Transmission Owner (TO) functions.

The SO's future role and structure

1.5. On 12 January we published a statement with the Department for Business Energy and Industrial Strategy (BEIS) and NGET, setting out our joint aspirations for the future of the SO and how this might be delivered.¹

1.6. Alongside this statement we released a consultation on the future role and structure of the SO. In this consultation we highlight our belief that the SO's roles need to evolve further to ensure it is well placed to both respond to and facilitate the transformation of the electricity system. This includes both new roles for the SO and clarifying our expectations of how it will undertake existing roles.

1.7. We outlined four areas where we believe the SO's role needs to evolve:

- *Acting as a residual balancer.* In carrying out this role we would like to see the SO thinking more widely about how it can drive greater efficiency in balancing, and how its actions in the short term can impact wholesale costs in the long term.
- *Facilitating competitive markets.* We consider that the SO's knowledge of the market and system balancing means that it is well placed to understand the interactions between the different market arrangements and rules, and how they need to adapt to support effective competition, innovation and better outcomes for consumers more generally. We think the SO should take a more active role in influencing the future development of these markets.
- *Facilitating a whole system view.* We think the SO should have a key role (alongside other network companies) in ensuring that individual issues or system needs are looked at as part of the whole picture rather than solely from a transmission or distribution system perspective.
- *Supporting competition in networks.* We think the SO should have a role in identifying the right projects for tendering and in developing projects before a tender is run.

1.8. In that document we also stressed that we expect changes to start to be made immediately, and we pointed to the importance of mind-set and cultural changes within the SO business to make sure the future framework delivers for consumers.

1.9. We also set out that we believe change is needed to the structure of the SO, to mitigate conflicts of interest. We're proposing that the SO should be a separate

¹ <https://www.ofgem.gov.uk/publications-and-updates/future-arrangements-electricity-system-operator-its-role-and-structure>

company with its own specific licence, with licence modifications to ensure sufficient separation between the SO and other NG Group businesses.

1.10. Subject to the outcome of the consultation, we envisage that full legal separation of the SO could be in place by April 2019. However, we consider that NGET could take steps to increase separation ahead of April 2019.

Focus of this document

1.11. This document - which should be read alongside our 12 January consultation - launches our review of how we should design our SO regulatory framework to support our proposed changes to the SO's future role and structure.

1.12. This involves answering questions about what combination of clear licence conditions, enforcement, incentives and governance will be able to ensure that the SO delivers the maximum possible benefit to consumers, across each of its different roles in the electricity system.

Objectives for our future SO regulatory framework

1.13. In line with our proposals for the SO's role and structure, our objective is to introduce a future SO regulatory framework which:

- Drives SO behaviour which maximises the efficiency of the *whole* electricity system *both now and in the future*, in particular by facilitating greater competition in markets and by supporting efficient trade-offs between operational and investment costs;
- Provides stakeholders with confidence that the SO is acting in the best interests of the system and consumers, and gives them a platform to hold the SO to account;
- Creates risks and rewards for the SO which are proportionate and aligned with its performance, which support balanced decision-making, and which encourage it to innovate and seek actions which drive long term benefits;
- Gives the SO sufficient flexibility to find the best approaches to driving positive system outcomes (including by working closely with network operators and market participants);
- Is transparent, brings different aspects of the framework together, and avoids unnecessary administrative burden.

1.14. The current SO regulatory framework was designed for an integrated SO and TO and adapted as the SO's role evolved. With our proposed move to a legally separate SO, we believe now is a good time to look at all aspects of the current SO regulatory framework to consider whether they interact in a way which drives overall benefits for consumers. Our future ambition is to simplify this regulatory framework by considering how we can potentially bring all the different elements together under one consistent package.

Timing of future changes to the framework

1.15. In order to achieve our aims for the future SO regulatory framework, it is likely that we will need to make changes in a number of progressive steps. Our key considerations when thinking about the timing of future changes are:

- *April 2021 is a key date.* The current transmission price control, a key aspect of the SO regulatory framework, does not expire until 2021. The incentives we place on the SO under EMR also end then. We therefore think 2021 presents a good opportunity to consider how to regulate all the SO's costs together under one consistent package. By this time, we would also have greater clarity on the next transmission price control, enabling us to make more informed choices about how our framework design can maximise the chance of efficient trade-offs between operational and investment costs.
- *Introducing improvements from April 2018.* We believe making some key changes from April 2018 would be beneficial. This is particularly as we would like to see a shift in the way the SO performs its roles under its existing obligations before our proposed legal separation in 2019. In addition, we are currently proposing a SO incentives scheme on NGET's external balancing costs that would expire on 31 March 2018. We therefore face a decision about whether to continue with these incentives or not, and if so, what form they should take.
- *Accommodating licence separation and future roles.* Whilst we believe that changes to the framework can be made prior to our proposed date for legal separation in April 2019, we will need to ensure that any changes are aligned with this move. There may also be some areas where changes could be needed after April 2018 to accommodate and regulate the SO's future roles. For example, in relation to the SO's role in onshore electricity network competition.
- *A need to create certainty for the SO.* In order to achieve our aim for a framework which supports longer run outcomes for consumers, we believe we may need to create certainty for the SO about how it will be regulated over longer time horizons. We have long had ambitions to introduce longer term SO incentives scheme periods.² Where we make changes to the framework in steps, we think it is vital that this is done in a way which doesn't discourage the SO from looking beyond these dates and making long term trade-offs.

1.16. This consultation is considering how to set an appropriate framework for the SO from April 2018 and beyond. We welcome views from stakeholders on how we should plan the timing of our changes to the SO regulatory framework in order to ensure we can meet our future objectives.

² See for example Chapter 5 of our consultation on SO incentive schemes from April 2013: https://www.ofgem.gov.uk/sites/default/files/docs/2011/06/so-incentives-from-april-2013-initial-views-consultation_0.pdf

2. The current SO regulatory framework

Chapter Summary

We regulate the SO to ensure its actions align with the interests of consumers. The current framework is made up of four key aspects. This includes the obligations and requirements we place on the SO, and our approach to enforcing these obligations. And it also includes three regulatory schemes: the RIIO-T1 price control, our incentives on the SO's external costs and the EMR Delivery Body incentives.

2.1. In this chapter we briefly explain why we regulate the SO before summarising four aspects of the current SO regulatory framework.

Why we regulate the SO

2.2. The SO can influence electricity system costs in a number of different ways. This includes (but is not limited to):

- Its approach to real time system balancing, including judging which balancing actions to take at which time given expected supply and demand and the dynamics of the system;
- How it influences market participants' decision-making, through the information it publishes and the forecasts it produces;
- The way it impacts competition through the design of balancing services and proposals to change industry arrangements;
- How it coordinates outage planning with network operators and makes trade-offs between system operation and network costs; and
- The recommendations it makes on areas such as the capacity market and network reinforcement, which can have a large bearing on investment decisions.

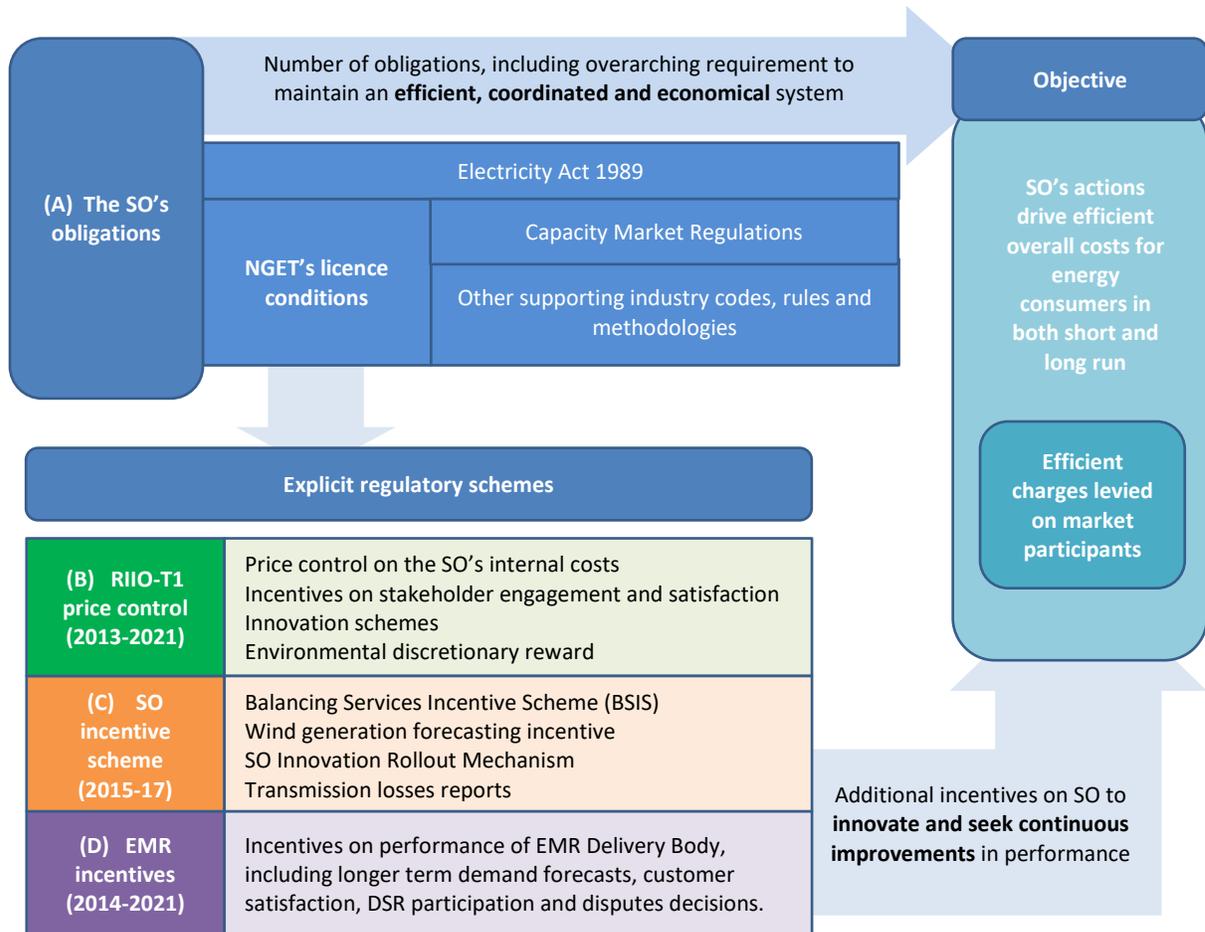
2.3. These costs can be significant. For example, its balancing actions cost around £850m a year (around £9 on a consumer's annual bill). Whilst the influence it can have on investment decisions can have a substantial impact on costs for years to come.

2.4. However, as the SO is a monopoly business, it does not face pressure from competitors to innovate and drive continuous improvements in efficiency. And as the SO is required to meet certain objectives (such as system security), it may be naturally risk-averse and place less emphasis on being cost efficient in meeting these objectives. Also, because the costs of the SO's actions are passed on to consumers, there may not be sufficiently strong incentives for the industry to scrutinise, and put pressure on these costs. We therefore use a number of regulatory tools to help ensure the SO's actions align with the interests of consumers.

Overview of the current SO regulatory framework

2.5. Figure 1 provides an overview of our current regulatory framework. It focusses on four aspects of the framework: (A) the SO's obligations; (B) the RIIO-T1 price control; (C) the SO incentives scheme; and (D) the EMR Delivery Body incentives. We describe each of these aspects in the relevant sections below.

Figure 1 – Overview of the current SO regulatory framework



A) The SO's obligations

2.6. The current SO regulatory framework contains a suite of obligations and requirements in primary legislation, NGET's licence and supporting industry codes and methodologies. This includes a mix of specific requirements and overarching obligations.

2.7. For example, it has specific requirements around: keeping the system safe and secure within certain operational limits; managing connections to the transmission network; maintaining and administering several codes and

methodologies underpinning the industry arrangements; publishing information about expected future system trends and how it intends to buy balancing services; and carrying out responsibilities under the network options assessment process.³

2.8. Across all of its roles, the SO has an overarching obligation to develop and maintain an **efficient, co-ordinated and economical system** of electricity transmission; and to **facilitate competition** in the supply and generation of electricity.⁴ Similar obligations are also contained in the SO's licence where it is required to 'direct the flow of electricity onto and over the national electricity transmission system in an efficient, economic and co-ordinated manner', and ensure that balancing services are procured in a 'non-discriminatory manner'.⁵

2.9. We closely monitor the SO's performance to ensure it is acting in line with its obligations. If we believe it is not doing so then we will consider the need for enforcement action, which can result in a fine of up to 10% of NGET's total revenue.

2.10. Where we believe it would be in consumers' interests, we supplement the SO's obligations with explicit incentive mechanisms. These incentives are primarily designed to encourage the SO to innovate and continually improve its performance. We can do this for example, by exposing the SO to the types of reputational and financial risks and rewards that a company might face in a market place. The SO currently faces a number of incentives across the three different regulatory schemes described below (B, C and D).

B) The RIIO-T1 price control

2.11. The RIIO-T1 price control sets out the outputs that 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 2021.⁶ The price control allows companies to earn a regulated rate of return for their activities.

2.12. NGET's price control covers both its SO and TO functions. Whilst some aspects of the price control are more focussed on the TO function, there are a number of aspects which are relevant to the SO function. These are described below.

³ See particularly the Electricity Transmission Standard Licence Conditions, Part C:

<https://www.ofgem.gov.uk/licences-codes-and-standards/licences/licence-conditions>

⁴ See the Section 9 of the Electricity Act 1989:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/490992/Electricity_Act_1989_Energy_Bill_2015-16_Keeling_Schedule_.pdf

⁵ See Condition C16 of NGET's licence.

⁶ For more information please see: <https://www.ofgem.gov.uk/network-regulation-riio-model/riio-t1-price-control>

Price control on the SO's internal costs

2.13. The SO is funded for carrying out its roles and requirements across the energy system through RIIO-T1 (including its role in EMR). It has an annual allowance for its total expenditure (totex) on its 'internal costs' of around £140m a year. This includes capital expenditure (capex) and operational expenditure (opex). For the SO, capex is primarily related to investment in IT infrastructure whilst opex covers its ongoing running costs, such as staff costs.

2.14. NGET has a financial incentive to seek steps to minimise these internal costs. This is because through the price control, NGET faces a 50% share of any over or underspend against its totex allowance. The SO's actual expenditure on internal costs is levied on market participants through Balancing Services Use of System (BSUoS) charges, which are ultimately passed through to consumers.

Incentives on stakeholder engagement and satisfaction

Stakeholder Engagement Incentive

2.15. The RIIO Stakeholder Engagement Incentive aims to encourage network companies (which for NGET includes the SO) to engage effectively with a wide range of stakeholders and use this to inform how they run their businesses. It is designed to incentivise network companies to perform beyond 'business as usual' standards and to seek timely input and feedback from stakeholders on relevant issues, business activities and other developments.

2.16. Under the incentive, network companies submit evidence on their engagement activities to us. These submissions must meet certain minimum criteria to be deemed eligible for a financial reward. This includes evidence of a comprehensive engagement strategy, that they have engaged with a broad range of stakeholders and that they have acted on feedback.

2.17. Companies that meet our minimum criteria are then assessed by an independent panel. The panel scores each company out of 10 across five weighted criteria. This score is used to determine the financial reward for each company. Scores under 4 receive no reward, whilst scores over 9 gain the maximum reward, which for NGET, may be up to 0.5% of its base revenue.

NGET Customer and Stakeholder surveys

2.18. The Customer Survey is an additional incentive on NGET's functions (including the SO) to improve the service it provides during its key interactions with customers. NGET is required to survey its customers once a year to obtain an overall 1-10 rating from them. Areas covered by the survey include charging, outages, contracts and settlements, regulatory frameworks and the control room.

2.19. The Stakeholder Survey is similar to the Customer Survey but relates to NGET's engagement with stakeholders. In particular, NGET surveys its key stakeholders before, during and after major infrastructure projects. It also surveys other stakeholders it deals with within the day to day operation of its business.

2.20. The combined satisfaction score translates to a financial reward or a penalty of up to $\pm 0.7\%$ of its allowed annual revenue in years 1 to 3 of the price control and up to $\pm 1\%$ during years 4 to 8. For the customer satisfaction survey we have set a baseline target of 6.9 out of 10. For stakeholder satisfaction survey we have set a baseline of 7.4 out of 10 – however this will only apply from year four of the price control (2016/17 onwards).

Innovation schemes

2.21. The RIIO framework also includes several specific innovation schemes⁷. These consist of the following mechanisms relevant to the SO:

- Network Innovation Allowance (NIA) - a set allowance that each of the RIIO network licensees receive to fund smaller scale innovative projects. The NIA provides funding equivalent to 0.7% of NGET's allowed revenue. Licensees can recover 90% of the costs of projects from customers through this mechanism.
- Network Innovation Competition (NIC) - an annual competition for funding larger, more complex projects. It provides funding for development and demonstration of novel commercial and technical methods that have a direct impact on licensees' networks.

2.22. The NIC and NIA can both fund commercial innovation and therefore may be relevant to the SO.

Environmental Discretionary Reward (EDR)

2.23. The RIIO EDR scheme is also applicable to the SO. This is an incentive designed to sharpen transmission companies' focus on strategic environmental considerations and organisational and cultural changes to facilitate growth in low carbon energy.⁸ The EDR scheme has a standard annual financial reward of up to £4m across all applicants. In addition, up to 50% of the unallocated funds from the previous year can be added to the amount of money that can be rewarded in any one year.

⁷ Please see: <https://www.ofgem.gov.uk/network-regulation-riio-model/network-innovation/electricity-network-innovation-competition>

⁸ Please see: <https://www.ofgem.gov.uk/publications-and-updates/decision-riio-t1-environmental-discretionary-reward-scheme-2014-15-electricity-transmission-licensees>

C) SO incentive scheme

2.24. Another key aspect of the SO regulatory framework are the incentives we place on the SO's 'external costs' of system operation and other outputs that can influence electricity system costs. Under our current SO incentive scheme, which runs from 2015-17, there are a number of incentives. These are described below.

2.25. We are also proposing to introduce an 'interim' SO incentive scheme from April 2017 until March 2018 whilst we review the regulatory framework. For more information on this interim scheme, please see Chapter 6.

Balancing Services Incentive Scheme (BSIS)

2.26. The main incentive on the SO under the current incentive scheme is BSIS. BSIS sets incentives on the SO's operation of the transmission system (encompassing costs of around £850m a year). It sets a financial target for the costs the SO incurs in ensuring that the system is kept in balance, including both energy and constraint costs. If the SO beats this target, it gains a 30% share of any savings, and if it spends more it incurs 30% of the additional costs. The maximum incentive reward or penalty the SO can receive each year is ±£30m. The final BSIS target also currently includes a target for the costs the SO incurs to be ready to respond in the event that there is a need to re-energise part or all of the entire system (a process known as Black Start).

Wind generation forecast incentive

2.27. The SO is financially incentivised to take steps to improve its day-ahead forecasts of wind generation. The key objective of this is to help drive improvements in market participants' operational decisions and more efficient wholesale market outcomes. The incentive is worth ±£250k per month and based on the SO's percentage forecast errors around a set target, which differs according to season.

SO-Innovation Rollout Mechanism (SO IRM)

2.28. The SO IRM allows the SO to apply to us for up to £10m of funding to implement up to three innovative system operation techniques which would provide benefits to consumers beyond the two-year incentive scheme. We consider whether to grant the funding depending on whether the application meets requirements set out in NGET's licence.

Transmission losses

2.29. We require the SO to report on the cost of electricity lost on the transmission system and the measures it has undertaken to reduce losses. The aim of this reputational incentive is to help inform the market of existing and future drivers of financial losses and how these losses are taken into account by the SO when it is

undertaking balancing activities. This incentive was introduced in 2013 and replaced the previous approach where transmission losses were financially incentivised as part of BSIS.

D) EMR Delivery Body incentives

2.30. We also set incentives on the SO in relation to its role as the EMR Delivery Body.

Financial incentives on the EMR Delivery Body

2.31. Participants can dispute certain decisions made by the EMR Delivery Body. Where they disagree with the judgments made by NGET, they can lodge further appeals to us.⁹ During 2014/15 and 2015/16, we placed a financial incentive on the EMR Delivery Body on the accuracy of its dispute decisions. Under this incentive, it could face a financial reward or penalty of $\pm\text{£}125\text{k}$ depending on the number of decisions we overturned.

2.32. From 2016 until 2021 we are expanding incentives on the EMR Delivery Body and are placing them in the following areas¹⁰:

- its year ahead and four years ahead demand forecasts (worth $\pm\text{£}2\text{m}$ and $\pm\text{£}1\text{m}$ respectively);
- the volume of pre-qualified DSR capacity in the year ahead CM auctions ($\pm\text{£}1\text{m}$);
- EMR customer and stakeholder satisfaction surveys (up to $\text{£}0.6\text{m}$); and
- The accuracy of EMR dispute decisions ($\pm\text{£}0.2\text{m}$).

Annual report on EMR Delivery Body's performance in relation to the CM

2.33. We also produce an annual report showing how well NGET has performed its EMR delivery functions in relation to the CM. As part of this, we look at the deliverables NGET was required to provide over the reporting period and assess its performance against a number of key performance indicators. For example, the timeliness of running different processes and overall stakeholder satisfaction.

⁹ For more information on the EMR Dispute Resolution process please see: <https://www.ofgem.gov.uk/electricity/wholesale-market/market-efficiency-review-and-reform/electricity-market-reform/electricity-market-reform-emr-dispute-resolution>

¹⁰ Found here: https://www.ofgem.gov.uk/sites/default/files/docs/2015/09/decision_on_revenue_outputs_and_incentives_for_nget_plcs_roles_in_electricity_market_reform_0.pdf

3. Review of the current framework

Chapter Summary

We are reviewing the current regulatory framework to help inform how it should be designed in the future. We have collated information and data on the performance of different aspects of the framework to help stakeholders assess how it might need to evolve. At this stage, we have placed a particular focus on lessons we can learn from the incentive on the SO's balancing costs. This is because as our approach to regulating balancing costs will be a key consideration from April 2018.

Question box

Q3: What lessons can be learned from our previous approaches to regulating the SO? What are the key areas where changes might be needed in future?

3.1. In this chapter, we look at the performance of the current SO regulatory framework across the four areas described in Chapter 2. For this we have drawn together data and information on the SO's performance against its different incentives. The purpose of this is to increase transparency about the current framework and help stakeholders assess where changes might be needed.

3.2. At this stage, we have placed a particular focus on the current approach to incentivising balancing costs. This is because BSIS is one of the largest incentives currently on the SO (directly setting incentives on costs of around £850m a year). It is also because our approach to regulating these costs will be one of the aspects of the framework we will need to make a decision from April 2018 onwards.

A) The SO's obligations

3.3. We monitor the SO's performance to ensure it is acting in line with its obligations. Where appropriate, we ask it to provide additional information to demonstrate how it is meeting its requirements in different areas.

3.4. If we find a breach, we have the ability to impose penalties or secure redress for consumers through our statutory enforcement powers. We can also secure results through alternative action (for example this can result in a company swiftly putting things right for consumers, without us finding a breach).

3.5. Since 2009, we have not opened an enforcement case or issued NGET with a financial penalty for a breach of its obligations, including its obligation to maintain an efficient, coordinated and economical system.¹¹

¹¹ Please see: <https://www.ofgem.gov.uk/investigations/investigations-and-enforcement-data>

B) The RIIO-T1 price control

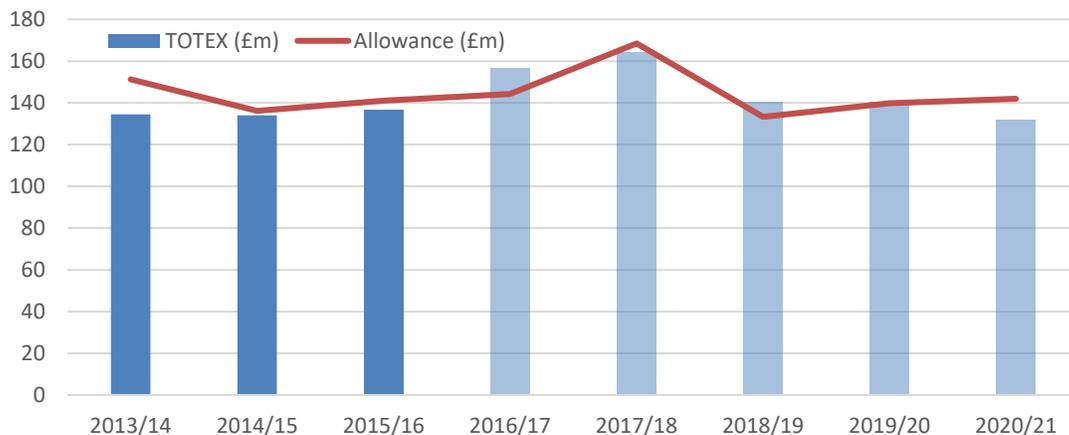
Price control on the SO's internal costs

3.6. For the first three years of RIIO-T1, the SO has incurred less than its allowances for internal costs. In the first year (2013/14), NGET spent approximately £17m less than its target. This was partly due to delaying spend on IT systems until future years. In the second year (2014/15), the SO also outperformed against its allowance of £136m, although underspend was only small (£2m). This was down to savings in its opex. The SO explained that by modifying working practices, realigning staff terms and conditions and reducing waste it created a 41% increase in productivity over the period.

3.7. In year three (2015/16) the SO outperformed against its allowance of £141m. The underspend is relatively small (£4.5m) and comprises a small overspend in capex of £3m and a larger underspend in opex of £7.5m. This capex overspend partly reflects investment in new systems to support NGET's role as EMR Delivery Body and the operation of new balancing products.

3.8. As shown in Figure 2, in its last performance report, NGET forecasted that over the whole price control it would incur less than its allowances by around £18m (including £60m overspend on capex and £78m savings in opex).¹²

Figure 2 – The SO's forecast totex spend on internal costs compared to RIIO allowances



¹² Figures are from NGET's latest performance report (2015/16): <http://www.talkingnetworkstx.com/general-performance.aspx>

Incentives on stakeholder engagement and satisfaction

Stakeholder Engagement Incentive

3.9. NGET's performance under the Stakeholder Engagement Incentive is shown in Table 1. NGET's scores have increased since the beginning of the price control showing evidence of progress with its stakeholder engagement.

Table 1 - NGET's performance under the stakeholder engagement incentive

	2012/13 (trial year)	2013/14	2014/15	2015/16
Score out of 10	3.4	5.75	6.00	6.25
Reward (£)	n/a	n/a	1.49m	3.81m

NGET customer and stakeholder surveys

3.10. Table 2 shows the scores out of ten received by NGET through its customer and stakeholder surveys. As can be seen it is currently beating its baseline targets (although we note there is no financial payment associated with the stakeholder satisfaction survey until 2016/17 onwards).

Table 2 - Scores out of ten under NGET's customer and stakeholder surveys

	2013/14	2014/15	2015/16
Customer Survey (baseline = 6.9)	7.4	7.4	7.5
Stakeholder Survey (baseline = 7.4)	7.5	7.7	7.5

Innovation schemes

Network Innovation Adjustment (NIA)

3.11. From 2013 to 2015, NGET have funded 131 projects using its NIA. Table 3 shows NGET's NIA expenditure, including expenditure as a proportion of its allowance.

Table 3 - NGET's NIA expenditure

Expenditure / allowance used	2013	2014	2015
NIA Expenditure (£m)	6.1	9.1	8.8
Percentage of allowance spent (%)	55.6	74.9	75.3

Network Innovation Competition (NIC)

3.12. NGET has been granted funding for three projects under the NIC – one project each year since the inception of the scheme. In 2016 it was awarded funding for its Transmission & Distribution Interface 2.0 project, which relates specially to the SO. This will demonstrate how services traditionally offered by transmission-connected generation to the SO (such as voltage stability and thermal capacity) can be provided by distribution-connected energy resources. The SO was awarded £8m of funding for this project.¹³

Environmental Discretionary reward (EDR)

3.13. Table 4 summarises the decisions made under the EDR for transmission companies. As can be seen, NGET received a reward in 2014/15 after being judged to be in the 'leadership' performance band. In this year, the EDR panel considered that NGET demonstrated it had a clearly defined environmental strategy at group level, with strong linkage into management, including procurement. However, they felt more evidence in the areas of system planning and connections for low carbon generators would have been helpful. NGET did not receive a leadership rating or reward in 2015/16, partly due to a lack of tailored evidence in its submission.¹⁴

Table 4 – EDR decisions in 2014/15 and 2015/16

	2014/15			2015/16		
	Annual Statement	Performance Band	Financial Reward	Annual Statement	Performance Band	Financial Reward
NGET	<i>Satisfactory</i>	<i>Leadership</i>	£2m	<i>Satisfactory</i>	<i>Proactive</i>	none
SHE-T	<i>Satisfactory</i>	<i>Proactive</i>	none	<i>Unsatisfactory</i>	<i>Engaged</i>	none
SPT	<i>Satisfactory</i>	<i>Engaged</i>	none	<i>Satisfactory</i>	<i>Leadership</i>	£4m

C) SO incentive scheme

Balancing Services Incentives Scheme (BSIS)

3.14. Figure 2 provides an overview of BSIS targets and outturn incentivised balancing costs since 2001. As can be seen, the SO has typically incurred less costs than its targets, although on two occasions it incurred significantly more. During this period, the SO has hit its BSIS cap on five occasions and its BSIS floor on one occasion. In recent years, targets have had an upward trajectory whilst incentivised

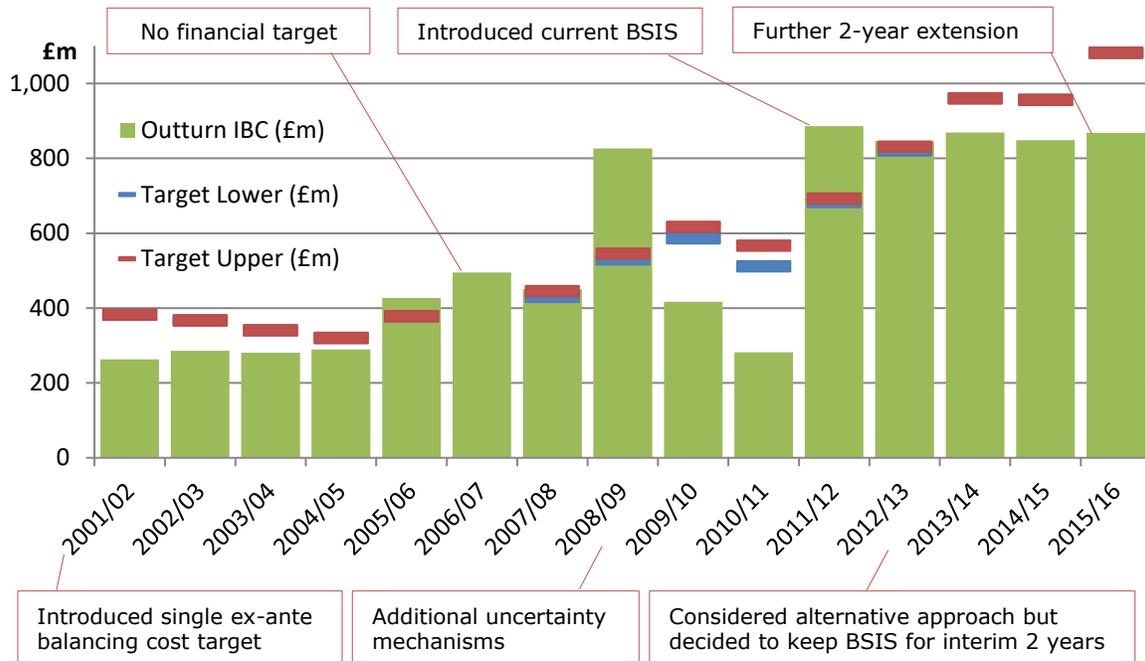
¹³ For more information please see: <https://www.ofgem.gov.uk/network-regulation-riio-model/network-innovation/electricity-network-innovation-competition>

¹⁴ For more information on EDR decisions please see: <https://www.ofgem.gov.uk/publications-and-updates/decision-riio-t1-environmental-discretionary-reward-scheme-2015-16-electricity-transmission-licensees>

Future arrangements for the electricity System Operator: the incentives framework from April 2018

costs have kept relatively stable. More detailed figures for BSIS performance since 2013, including monthly data, are contained in Appendix 2.

Figure 2 – BSIS targets and outturn incentivised costs since 2001



3.15. Box 1 below contains some further discussion on the lessons we can learn from the current BSIS, including our initial views on how this approach might need to change in the future.

Box 1: Lessons learned from the balancing cost incentive

Purpose of this box

As already highlighted, across each of areas of the SO's activity, we are considering which combination of clear obligations, incentives, and governance is most likely to drive benefits for consumers. To help with these decisions, we need to learn from our experiences with the current framework. We would particularly like to hear stakeholders' views on what can be learned from our previous approaches to regulating the SO.

This section considers the lessons that can be learned from BSIS. We've chosen to focus on this incentive for a number of reasons. Firstly, the SO's balancing activity involves significant costs (around £850m a year). And secondly, our approach to regulating these costs is one of the aspects of the framework which we will have to make a decision on from April 2018. We have also chosen this incentive because it has been set, in a variety of ways, for over a decade so we have lots of experience to learn from.

Below we provide a short overview of how BSIS has evolved over time and then go on to discuss some of the lessons we can learn for future regulatory framework design.

The evolution of BSIS

We have used a target-based approach to setting incentives on the SO's balancing costs since 2001. The method used to set these targets have evolved over time. In the first iteration of BSIS we set targets at the beginning of the year based on analysis of historic costs and simple modelling. However, as the system evolved, challenges in forecasting costs at the year ahead stage led to concerns about incentive payments being overly driven by events outside of the SO's control.

As a result, measures were added to try and mitigate this risk and enable the target to change if system conditions were different than expected or underlying assumptions changed. This eventually led to the introduction of the current BSIS framework in 2011 – where targets are derived by statistical models which feed in outturn information about the system (such as availability and market prices).

Our monitoring work suggests that BSIS has been successful in influencing SO behaviour and encouraging it to take actions to reduce within-year balancing costs below targets. For example, we see evidence of the SO striking new contracts with providers in order to incur less than it might have spent in the BM.¹⁵

However, both the system and the nature of balancing has changed significantly since we introduced BSIS. Changes to the capacity mix are having large implications for system operation.¹⁶ In particular, less predictable demand and supply has heightened the need for new, more flexible balancing resources and accurate forecasts to ensure the system is balanced efficiently. There is also a need to find new solutions for maintaining system inertia and local voltage levels as synchronous thermal power stations close. While the rise of embedded generation means that actions taken by the SO can increasingly impact the operation of the distribution networks and vice versa.

These changes mean that in future, *overall* balancing efficiency will be increasingly dependent on the combination of efficient operational decisions; accurate forecasting; transparent market signals; strong coordination between network and system operators; and arrangements which enable new and existing resources across the whole system to compete on a level playing field. We think that now is the right time to consider whether placing the main focus on short term targets for transmission system costs is likely to align with consumers' longer term interests.

Lessons learned from the current BSIS

Below we assess the current BSIS scheme in four areas which are relevant to our objectives in Chapter 1. This assessment is based on our initial findings and the feedback we have received from stakeholders to date. The areas are:

- Driving SO innovation and long term consumer benefits;
- Contributing to whole system efficiency;
- Coping with system change and uncertainty;
- Incentive governance and transparency.

¹⁵ Please see Chapter 2 of our initial consultation on SO incentives from April 2017 for more discussion about the impact of BSIS.

¹⁶ Please see National Grid's System Operability Framework 2016 for more information on how system changes are affecting system operation, including a description of the challenges associated with voltage management and inertia: <http://www2.nationalgrid.com/UK/Industry-information/Future-of-Energy/System-Operability-Framework/>

Driving SO innovation and long term consumer benefits

As part of the SO's obligation to develop and maintain an efficient, coordinated and economical system, we expect it to strike the right balance between steps to reduce short term costs and ways to support longer run system efficiency. For example, whilst contracting strategies can help reduce costs in the short term, earlier initiatives to facilitate more competition between balancing providers could drive even lower costs.

The design of the current balancing incentive may encourage the SO to overly prioritise shorter term steps to reduce costs ahead of more innovative, longer term solutions. This includes actions we see as more 'business as usual' system operation, such as adjusting year-ahead transmission outages plans, renegotiating intertrip agreements or using different tools to manage system voltage.

This may partly be because the current incentive length is too short. It is currently set for two years, with a review of key parameters after one year - within which timescales the opportunity for the SO to develop innovative new approaches to system operation is relatively limited. Uncertainty about future incentive scheme parameters could mean that the SO has more to gain financially from focusing on actions which lead to more immediate cost reductions. For example, because it could perceive it to be risky to incur upfront costs or an incentive penalty without the guarantee of being rewarded in the future.¹⁷

Lessons for future incentives. We think that in the future, we may need to consider whether any incentives on balancing costs should be more focussed on long run outcomes for consumers. This is particularly as there is a need for the SO to develop new, innovative new approaches to system operation as the system transforms.

Contributing to whole system efficiency

Whilst the current approach creates a strong incentive on the SO to take actions to incur less than BSIS targets (eg, by negotiating bilateral contracts outside of the BM), there is currently less incentive on the SO to factor in the implications these actions have on *overall* system efficiency; including how its actions could affect competition or wider network costs.

One example is the way the SO's approach to balancing and its ancillary services have evolved. As the SO has developed new services and contracts to reduce costs, we feel that transparency about system operation has reduced. This risks dampening market signals and undermining long run electricity system efficiency. We are also aware of stakeholder views that more consideration needs to be given to the design of balancing services to ensure they promote competition (see Appendix 3 for an overview of stakeholder concerns in this area).

We also think that going forward there is an increased risk that the current BSIS could not sufficiently expose the SO to the full costs and benefits its balancing actions have for consumers. For example, actions taken on the distribution network which could create costs for DNOs or distributed energy resources, or which have hidden costs for consumers because of the impact they have on imbalance revenues. Part of the issue is that many of these costs may not be currently visible to the SO.

Lessons for future incentives. We think that in the future, relative to the current approach, incentives may need to put less emphasis on transmission system management and more emphasis on whole system coordination and measures to promote competition.

¹⁷ Please see our initial proposals for System Operator incentives from 2017 for some further discussion on using a short term target based approach for incentivising Black Start cost.

Coping with system change and uncertainty

The strength and stability of the current BSIS is very dependent on the ability of models to produce a robust baseline for efficient behaviour. We believe that the current modelling approach may not have kept pace with changes in the system.¹⁸ This has led to an increasing risk that the current incentive overly rewards or penalises the SO for outcomes outside of its control.

We see potential evidence of this looking at previous scheme data (see Appendix 2). For example, as shown in Figure 3, over the last few incentive years, payments/penalties have frequently hit or come very close to BSIS cap and floors. And often cap breaches have appeared likely early in the scheme. This is not only indicative of potential volatility but problematic because it could dampen the strength of the incentive.

Figure 3 – BSIS payments/penalties since 2009



Over the next few years, there are likely to be further changes which will impact on system operation and create additional complexity and uncertainty in modelling an efficient cost baseline. This includes the first CM delivery years from 2017/18 onwards. And it also includes the introduction of cross-border balancing procedures through Project Terre in Q3 2018, as well as additional requirements on how the SO approaches system balancing as a result of the Network Code on Electricity Balancing.¹⁹ We are also considering evidence on whether changes to arrangements are needed to enable more integrated and efficient balancing procedures across transmission and distribution networks through our call for evidence on a Smart, Flexible Energy System.

Lessons for future incentives. We think that in the future models will still be important for informing our assessment of the SO's performance - however the current models may need significant updates and more ongoing improvements. We intend to consider further whether they can or should be relied on to directly determine SO incentive revenue in the future given system uncertainty. In particular, if there is a lack of longer term credibility around the models, this could undermine incentives on the SO make longer term cost trade-offs. It is possible that alternative approaches to SO regulation could be more robust to system changes and create more stable, longer term incentives on the SO.

¹⁸ For example, the current modelling approach accounts for 'business as usual' actions taken by the SO outside of the BM by applying a discount factor of 0.68. As an increasing share of balancing actions are taken outside of the BM, this approach could be increasingly inaccurate.

¹⁹ <https://www.entsoe.eu/major-projects/network-code-development/electricity-balancing/Pages/default.aspx>

Incentive governance and transparency

The BSIS models are owned and maintained by the SO and validated by us at the beginning of the scheme. When issues with targets materialise, the onus is on the SO to identify errors and correct them. In our August consultation on incentives from April 2017, we expressed a concern that asymmetry of information between us and the SO was calling into question our confidence in this approach.

A key concern is that when issues occur with the models, the SO may face perverse incentives to address them as this directly impacts incentive revenue. Our experiences recently, particularly during the 2016/17 scheme, is that targets have on occasion become unrealistically high. We feel the SO could have addressed errors with the models more quickly, and on a more incremental basis, rather than making more significant changes in one go.

Stakeholders have also in the past voiced their concern about the lack of transparency around SO incentives. In particular, some stakeholders have told us that they do not believe the industry has much understanding of the current BSIS models, and that this makes it hard to provide meaningful comments about the SO's incentive performance. In previous schemes we have decided to work with the SO to improve incentive transparency on an informal basis.²⁰ Despite these steps, we think there is still room for significant improvement.

Lessons for future incentives. We think that in the future, we need to consider new governance arrangements which could facilitate much greater transparency and greater external involvement in SO regulation (see Chapter 5 for more discussion).

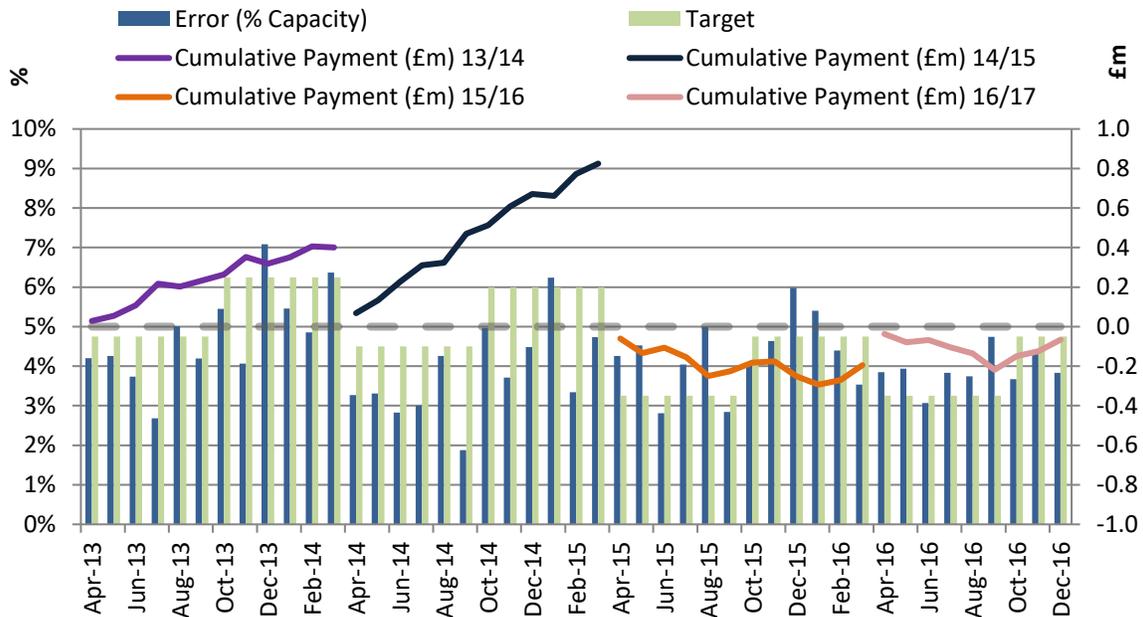
Wind generation forecasting incentive

3.16. Figure 4 shows the SO's performance against its wind generation forecasting incentive since 2013. Under our 2013-15 incentive scheme, NGET performed well against the incentive, earning over £401,000 in 2013/14 and nearly £825,000 in 2014/15.

3.17. Due to this outperformance, we tightened the incentive for 2015-17 in order drive continued improvements. Under these tighter targets, NGET has underperformed against the incentive target, so far losing approximately £224,000 for summer 2015 and £249,000 for summer 2016. NGET also underperformed the target in winter 2015/16 losing approximately £31,000.

²⁰ See Chapter 3 of our Initial Proposals for incentives from April 2015: https://www.ofgem.gov.uk/sites/default/files/docs/2014/10/rev1517-ip_consultation_final.pdf

Figure 4 – Wind Generation Forecasting Incentive performance since 2013



SO Innovation Rollout Mechanism (SO IRM)

3.18. Since its introduction in 2013, The SO has made two applications for funding under the SO IRM, both within the 2013/15 scheme. These were:

- Demand Turn Up Application – To aggregate 10MW of demand turn up services in Scotland to reduce wind constraint costs with a request for funds of £712,500.
- Demand Side Frequency Response Application – To aggregate 13MW of domestic storage heaters in London to provide frequency response services, with a request for funds of £2,600,400.

3.19. Whilst both applications involved innovation with conceptual merits we determined that the cases presented for funding were insufficient and as such should not receive funding. The SO did not make any applications for funding under the 2015/17 SO incentive scheme.

Transmission losses

3.20. To date NGET has released three annual Transmission Losses Reports, as well as publishing a transmission losses strategy in December 2013. Table 5 shows transmission losses on the GB system since 2011.

3.21. In the latest report (2015/16) NGET reported that the total volume lost on the GB Transmission system was marginally higher than the previous year. It noted that it was not possible to quantify the exact causes for the small increase in losses as these vary from year to year for various reasons. NGET highlights that it is considering transmission losses in equipment specifications and procurement processes and investigating various measures which could assist in addressing system losses.

Table 5 – Transmission Losses on GB system (% total energy)

	2011/12	2012/13	2013/14	2014/15	2015/16
GB transmission losses (%)	1.92	1.72	1.70	1.74	1.77

D) EMR Delivery Body incentives

Financial incentives on the EMR Delivery Body

3.22. In the both of 2014/15 and 2015/16 we did not overturn any dispute decisions made by the EMR Delivery Body. NGET therefore earned the maximum incentive payment under its dispute resolution incentive of £125k in both years.

3.23. The other financial EMR incentives described in Chapter 2, such as incentives on stakeholder engagement and demand forecasting, have come into effect from this year onwards and we intend to report on their progress at a later date.

Annual report on EMR Delivery Body’s performance in relation to the CM

3.24. So far we have published two annual reports on the EMR Delivery Body’s performance in relation the CM.²¹ In these reports we conclude that NGET has adequately performed its role as the CM Delivery Body. Although there have been IT issues which have led to delays in both years, they did not materially affect the operation of the CM.

²¹ https://www.ofgem.gov.uk/system/files/docs/2016/06/20160606_delivery_body_report.pdf

4. Future framework design

Chapter Summary

There are a range of ways we can regulate the SO. This includes clearly setting out what we expect from the SO under its obligations and using different types of incentives. We are seeking views on which approaches we should use in which areas of the SO's activity. Across many of the SO's roles, we believe we may need to be clearer about our expectations (eg, through clearer conditions or guidance). As part of this, we are considering whether to adopt a 'principles-based' approach to SO regulation. We are also considering where the use of financial and non-financial incentives could drive benefits and how these incentives could be designed.

Question box

Q4: Do you believe we need to introduce more clarity about what we expect from the SO under its obligations? How should this clarity be provided? To what extent should we set prescriptive or principles-based requirements?

Q5: Should we place financial incentives on the SO? If so, in which areas? And what form should they take?

Q6: Should we introduce more non-financial incentives on the SO? What approaches should be taken? Do you support the introduction of a set of KPIs, and if so, what should these KPIs be?

4.1. This chapter discusses the range of ways we can regulate the SO and invites views on which approaches we should use in the future, in each of the areas of the SO's activity.

Ways of regulating the SO

4.2. There are a range of ways in which we can influence the SO's behaviour through our regulatory framework. It is important to stress that there is no single best approach to influencing every behaviour and different approaches might be appropriate in the different circumstances. The first way is:

- **Setting clear expectations.** It is important that we set out clear expectations for what we are requiring the SO to achieve under its obligations. Clarity can be provided through a combination of transparent licence obligations and public guidance. We think that transparency about the situations in which we would consider enforcement action (which carries both financial and reputational risks) can strengthen the role obligations have in driving the SO's behaviour.

4.3. Where we think there would be benefits for consumers, we can supplement the SO's obligations with explicit incentives. We use two broad types of incentives:

- **Financial incentives** on revenue can drive strong behavioural change. This is particularly as they are often fed down into employee bonus and

rewards schemes and can influence where senior managers choose to focus resources. However, for financial incentives to work effectively, they need to be based around a robust and tangible baseline and a measurable outturn performance. If this is not the case, there is a risk of payments and penalties being unaligned with performance. Careful consideration also needs to be given to the design and relative size of different financial incentives to ensure they do not distort SO decision-making and lead to inefficient outcomes for consumers.

- **Non-financial incentives** (such as published reports on SO's performance) can also have a big impact on behaviour, particularly as they can relate to areas where performance can be attributable to specific senior managers. They require transparent and impartial reporting to ensure the SO is clear about how performance will be measured and that fair judgements are made. Reputational incentives can be useful to drive performance and help hold the SO to account to deliver outputs when it may not be appropriate to set financial incentives. For example, when insufficient data is available to precisely measure performance or where it is inappropriate for consumers to pay extra to incentivise the delivery of an output.

4.4. The way these incentives are governed and reported can have a big impact on how effective they are. We discuss this further in the next chapter.

4.5. It is also important to consider how different incentive interact (including with incentives on other companies, such as network operators). For example, whether there are any 'double impacts' (where an action under one incentive also improves performance under another) or 'trade-offs' (where an action under one incentive could undermine another output). In some circumstances, it can be better to bundle outputs together under one incentive to minimise the risk of distortions.

4.6. For our review, we intend to consider - across each of SO's future roles in the energy system - what mix of clear obligations and incentives would be most effective at regulating the SO. Our initial thinking is outlined below.

Clearer expectations around SO obligations

4.7. In our 12 January consultation, we noted that our proposed changes to the SO's role included both new roles for the SO and clarifying our expectations of how it will undertake existing roles. In a number of areas, we believe that the SO is already required to undertake these roles as part of its existing obligations, but that there is value in us clarifying our expectations around how the SO meets these obligations.

4.8. We are considering the best way to provide this additional clarity as part of our review of the SO regulatory framework. We believe that by doing so, we can place a greater emphasis on the important role obligations have in driving SO performance. This could in some cases lessen the need to supplement obligations with incentives.

4.9. As part of our proposals for interim SO incentives from April 2017, we are proposing to introduce a number of clearer supporting licence conditions to clarify some of our key expectations from the SO in relation to its licence requirement to “co-ordinate and direct the flow of electricity onto and over the national electricity transmission system in an efficient, economic and coordinated manner” (condition C16 of NGET’s transmission licence). We are also exploring whether supporting guidance documents could add further clarity in this area. These proposed conditions are intended to be the first step towards potentially developing a more holistic set of conditions/guidance across the SO’s roles from April 2018 onwards.

4.10. However, we also recognise that the SO is best placed to decide how to operate the system and how balancing services should be designed. And we consider the SO’s knowledge means that it is well placed to understand the interactions between the different market arrangements and rules, and how they need to improve to support effective competition and innovation. It is therefore vital that any new supporting licence conditions or guidance avoid being overly prescriptive. An overly prescriptive approach risks crowding-out SO innovation and the ability for the SO to adapt to respond to change.

4.11. We are therefore considering the extent to which we should set specific or more principles-based requirements for the SO. An important consideration in this area is the fact that we want to see an SO which anticipates challenges and is proactive in responding, rather than an organisation whose actions are driven by adherence to prescriptive rules and regulations. This is discussed further in Box 2.

Box 2: Prescriptive vs principles based regulation

In our regulation of retail markets, we are moving towards using ‘principles based regulation’, rather than a prescriptive rules-based approach, where we think this will achieve better outcomes for consumers. This is not the same as light touch regulation. Under this approach parties would still be bound by rules governing their behaviour and conduct. However, licence conditions would be less prescriptive and parties would have more flexibility in how best to meet their obligations. This approach is as much about following the spirit of the rule as about following the letter of the rule.

We are therefore considering what this means in practice for system operation. Higher level obligations for the SO based on the objectives we expect it to deliver should help ensure that it retains some flexibility in how to deliver this in an evolving market place. This should make the SO better able to react quickly to new challenges. For the SO to prosper under a principles based approach it would require a mind-set shift from the SO – it would need to be more proactive and take ownership of its objectives. The SO would also be expected to engage with industry about how it should undertake its role.

We would need to carefully monitor (and engage with industry on) how well the SO’s is delivering its objectives. In the event the SO fails to deliver it would be held accountable, if necessary through enforcement action.

In some areas, there will still be a need for more detailed licence obligations. We think this is more likely to be the case where the conflicts of interest could be greater and/or the SO’s role is a key critical part in a wider framework. For example, we expect that we would have detailed obligations with respect to the SO’s role in facilitating competition in networks.

Future financial incentives

4.12. As set out in our 12 January consultation, we will not re-open the RIIO-T1 settlement as part of our decision on the SO's future roles. However, where the SO is being asked to carry out a new or increased role we will consider whether any changes to funding might be necessary. Additional funding would only be considered where there is clearly a material increase in costs faced by the SO and the activity is beyond what was envisaged at the time of the RIIO-T1 settlement. If such cases do arise, then we will consider whether additional funding is needed alongside consideration of how the SO may be incentivised for that activity.

4.13. We are considering the extent to which supplementing the SO's obligations with additional financial incentives from April 2018 would still be beneficial. On one hand, we believe that when they're designed well they can have a strong impact on behaviour. However, we also recognise that as both the energy system and the SO's role becomes more complex, it becomes more important to consider whether different financial incentives can interact in a way which aligns with overall consumer benefits. We believe there is an increased risk that we inefficiently divert the SO's attention and resources towards certain outcomes at the expense of others. We plan to review literature on the impact of financial incentives and look at international experiences of SO regulation to gain more insight in this area.

4.14. We want to ensure that any additional financial incentives we do introduce from April 2018 are in line with our objectives in Chapter 1. Namely that they create risks and rewards for the SO which are proportionate and aligned with its performance; that they contribute to balanced overall decision-making; and that they are aimed at encouraging innovative actions which drive long term benefits.

Areas to consider and potential design options

4.15. We are considering the case for and against financial incentives across all the SO's future roles (from its role in markets, to whole system coordination through to planning). We welcome views on which areas they should apply to from April 2018.

4.16. We still see balancing costs as an area where the SO can have a significant impact on outcomes for consumers. However, as discussed in chapter 3 we believe that any future financial incentives in this area should recognise that the SO can influence these costs in a variety of ways over different timescales, including by driving improvements in arrangements, promoting competition in markets and coordinating with distribution network operators.

4.17. Going forward, we also see strong customer and stakeholder engagement as key behaviour needed for the SO to perform well in its roles. Strong stakeholder engagement will be vital for the SO to identify how procedures and arrangements need to evolve to drive competition, innovation and efficiency. And it will also be vital for helping to ensure the system develops in a coordinated manner. The SO already faces financial incentives in this area until 2021 as part of RIIO-T1 (see chapter 2).

We intend to consider whether, under a more independent SO with evolved roles, there is a need to build on these incentives from April 2018.

4.18. There are many ways to design financial incentives. These can range from approaches where a financial target is set up-front to approaches where a decision-maker decides on rewards/penalties at a later date. These approaches are discussed in more detail in Box 3. However, there may be other approaches and we welcome suggestions from stakeholders.

Box 3: Different approaches to financial incentives

There are a range of approaches to designing incentives and different approaches could be used in different areas. Two broad approaches and their relative merits are described below.

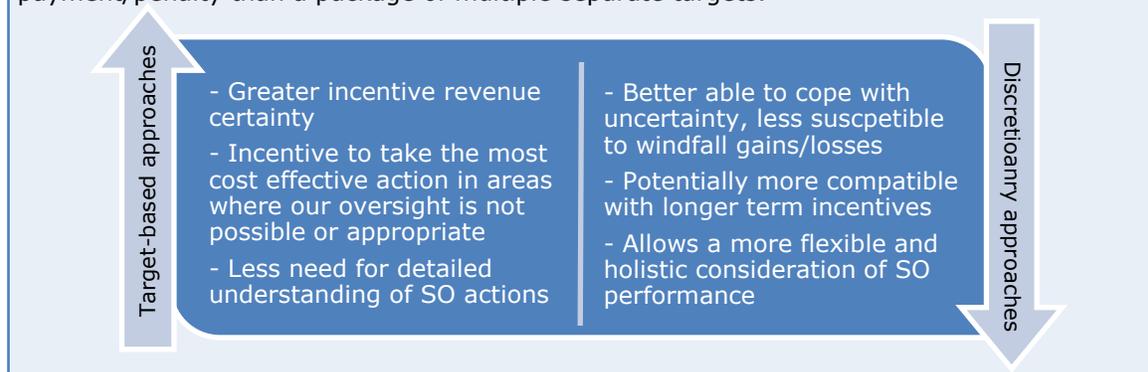
Target-based incentives are set at the beginning of an incentive scheme (either the actual targets or their underlying methodologies). Any payments of penalties are directly determined by data on performance against these targets. When designed well, they create certainty for the SO about the incentive revenues/penalties it receives from different actions. And they can also capture actions where regulatory oversight is not possible or appropriate.

However, target-based approaches are also less flexible and more susceptible to creating windfall gains and losses for the SO and consumers when there are uncertain or unexpected developments in the system. This makes it harder to set them for longer periods of time.

Discretionary incentives rely on a decision maker to determine what incentive revenues or penalties the SO should receive. There is a risk that this approach creates more revenue uncertainty for the SO and therefore undermines the power of the incentive - it is therefore vital that there is clear up front criteria and a transparent decision-making process. There is also greater onus on the decision maker to understand the detail of the SO's performance in order to ensure a robust incentive decision is made. It is therefore less likely to capture SO behaviours which are harder or less appropriate to monitor.

However, a discretionary reward process is also likely to be more flexible and more resilient to uncertainty in the system. This is because it is easier to fix the criteria for setting a reward over longer timescales than it is to fix a target-setting methodology. This may make it more compatible with longer term incentives.

There are many ways a discretionary incentive process could work. For example, it could still use the same inputs used to set targets (eg, the current BSIS models), but allow some discretion in the final decision to account for system changes and other relevant factors. A discretionary incentive process could also potentially enable a more holistic consideration of the SO's performance across all its roles and lead to a more appropriate overall payment/penalty than a package of multiple separate targets.



Future non-financial incentives

4.19. There are currently few targeted reputational incentives on the SO. In the future, with the introduction of a more independent SO with an evolved role in the electricity system, we believe it could be beneficial to introduce more non-financial incentives. This is particularly as for a number of the behaviours we would like to see in the future, financial incentives may not be appropriate. Either because it could be inappropriate for consumers to pay extra to incentivise the delivery of an output or because it might be difficult to robustly financially incentivise.

4.20. We intend to review how SO functions are regulated internationally to gain further insight on the types of non-financial incentives available. As we are proposing to move to a more independent SO structure, we believe there is benefit at looking at examples of the regulation of Independent System Operators (ISOs) in the United States. Box 4 contains some more discussion on this.

4.21. In particular, we believe there could be more focussed, regular reporting on the SO's activity and performance published to industry. This could involve developing a set of formal Key Performance Indicators (KPIs) to cover all the SO's roles in the system. These KPIs could be informed by a combination of data on system outcomes, stakeholder feedback and analysis. And they could potentially even include benchmarking against other SOs if suitable comparators can be found.

4.22. Alternatively, (or additionally), the SO could also be responsible for producing its own reports on overall energy system outcomes, including what it has done, and what it intends to do, to drive system improvements.

4.23. Our current preference is for us to continue to release energy system indicators and to link these to the SO's activity and performance, as we believe this could create the stronger reputational incentives. However, in any case, we would expect the SO to regularly communicate its activity to stakeholders; including the steps it has taken to promote more competitive market arrangements and enhance network coordination.

4.24. We also see the potential for more regular and coordinated stakeholder assessments the SO's performance being made publically available. This could potentially build on the stakeholder and customer surveys used under RIIO and/or be driven by the introduction of new industry panels (see chapter 5).

Box 4: Regulation of ISOs and reputational incentives in US

The international experience of regulating various forms of SOs provides some useful insight for our work on future SO regulation. Independent System Operators (ISOs) have been operating for a while in the US. The majority of these ISOs are non-profit entities accountable to the public, the industry and national regulators. There are many common principles in the regulation of these entities but the main ones are independence, robust accountability and transparency.

The governance arrangements of ISOs are an important element in ensuring their independence as well as their accountability towards industry and consumers. This accountability is enhanced through the Federal Energy Regulatory Commission's (FERC's) extensive market monitoring and publication of market performance metrics.

FERC produces and publishes regular assessments comparing the performance of ISOs in the US²². In particular, three key performance 'dimensions' are scrutinised: market benefits, organisational effectiveness and reliability. Within these dimensions are over 30 specific metrics which are measured to help inform performance.

- **Market benefits** – this includes a number of metrics to assess the performance of the ISO's wholesale market, in particular the level of competition. A key one is the price-cost mark-up metric, which compares the marginal price to the marginal cost of energy production. There are also metrics which look at price convergence between day-ahead and real time markets, congestion management performance, generators and DSR availability and the penetration of renewables.
- **Organisational effectiveness** - this measures the cost-effectiveness of the ISOs in accomplishing their objectives and providing value to market participants. Key metrics in this area include administrative costs and customer satisfaction surveys.
- **Reliability** – this includes metrics which examine both the short and long-term reliability of the ISO's operation of the system compared to reliability standards. It also includes metrics on demand and wind forecasting, and transmission planning and outage coordination.

In some areas of the US, ISOs are responsible for producing their own reports on the performance of their markets. The annual and quarterly wholesale market monitoring reports published from the Californian ISO are an example of the performance metrics that the ISO publishes to inform market participants²³. These metrics cover a wide range of aspects such as demand and supply trends, market competitiveness, congestion, and ancillary services. CAISO include its own recommendations in these reports.

²² Please see: <http://www.ferc.gov/industries/electric/indus-act/rto/rto-iso-performance.asp>

²³ Please see:

<https://caiso.com/market/Pages/MarketMonitoring/MarketIssuesPerformanceReports/Default.aspx>

5. Incentive scheme governance

Chapter Summary

We think incentive governance is a key part of our regulatory framework. We are considering ways to improve incentive governance and transparency. For example, we think that more independent auditing and quality assurance processes could be used to help build confidence in incentives. We also think there could be a much greater role for industry and that there could be benefit in introducing more expert panels. Finally, we see greater transparency and more easily accessible data on incentive performance as crucial to good governance.

Question box

Q7: How should SO incentives be governed in the future? Would you support a greater role for stakeholders in this process? How can we introduce more transparency around incentives?

5.1. A key aspect of the regulatory framework which we want to review is how incentives are governed. This includes questions such as: who is responsible for setting, verifying and/or making decisions on the incentives; what is the process for addressing any issues; and how easy it is for a range of stakeholders to understand incentive performance and contribute to the process.

5.2. Below we set out our initial thinking on ways the incentive governance arrangements could be designed in future to better achieve our objectives in Chapter 1. We are interested in stakeholder views on these suggestions as well as any other ideas for the future governance arrangements.

Initial thinking on future incentive governance

5.3. Going forward we think that the SO will need to consider how to ensure it has a mind-set and culture which is focussed on performing its roles in a way which maximises benefits for customers. With this in mind, we feel it is important that the regulatory framework is designed to encourage the SO to focus on the outcomes it needs to deliver rather than the details of incentive parameters. We believe governance is key to this.

5.4. We think there could be changes to arrangements in the following areas:

- Confidence building through independent audits or quality assurance;
- A greater role for industry;
- Use of panels and independent experts;
- More transparency and easily accessible data on performance.

Confidence building through independent audits or quality assurance

5.5. Some incentives on the SO may be dependent on detailed analysis and modelling. In order to ensure both ourselves and stakeholders have confidence in the performance of these incentives, we think there needs to be formal and thorough validation processes.

5.6. Historically, many of our incentives have been produced using analysis from the SO which is then challenged by us. However, as the electricity system and the SO's role increases in complexity, we feel there is also a greater risk of information asymmetry between the SO and ourselves. Going forward we believe there could be benefit in requiring incentives based on complex analysis or modelling to be audited or quality assured by an independent party. We also intend to review whether it would still be appropriate for the SO to be responsible for owning and maintaining any models used to set incentives.

A greater role for industry

5.7. Industry participants directly incur the costs of the SO's activities. However, we feel that there has been limited industry involvement in SO incentives to date. We think this is for two main reasons. Firstly, a lack transparency around incentives may not have given stakeholders a strong enough platform to hold the SO to account (we discuss this further below). And secondly because there may be dampened motivation on industry to spend resources to scrutinise the SO when some of the charges they face from the SO are socialised and passed through to consumers.

5.8. In the future we see a greater role for industry parties in the SO incentives process. We feel that as the complexity of the system and the risk of information asymmetry grows, wider scrutiny of SO performance can only be a good thing. We therefore believe there could be benefits in creating a more formal role for industry. For example, through the use of industry panels.

Use of panels and independent experts

5.9. Industry and/or expert panels are used in a number of areas of regulation. For example, under RIIO, panels provide recommendations on funding for the NIC and assess performance under the RIIO Stakeholder Engagement Incentive. A panel of experts is also used to scrutinise the SO's analysis for the capacity market.²⁴

5.10. We think panels could play a greater role in SO regulation and incentives in the future. These panels could have number of representatives who have a range of relevant backgrounds, skills and expertise. And they could have a range of different

²⁴ Please see: <https://www.gov.uk/government/groups/electricity-market-reform-panel-of-technical-experts>

roles. This could include everything from evaluating the SO's performance against KPIs, through to making recommendations on incentive penalties / payments, and potentially owning or quality assuring any models used in the incentives process.

More transparency and easily accessible data on performance

5.11. We think there is scope for much more transparency around incentives. Transparency is important because it enables a wide range of parties to participate in the incentive process and hold the SO to account. In the future believe there is a need for more regular and more easily accessible reporting on incentive performance.

5.12. Currently the SO produces Monthly Balancing Services Statements.²⁵ These statements contain a lot of information about the costs the SO has incurred balancing the system, as well as an overview of how the SO is performing against its BSIS target (in the interest of transparency, Appendix 2 contains graphs using data collated from previous MBSS reports). We also produce annual reports on incentive performance under RIIO-T1 and EMR.

5.13. In the future, we believe there should be more joined-up reports on incentive performance across all different SO incentives. We would also expect reports to contain more narrative. For example, explanations from the SO about why costs may be different from targets or costs in previous periods, including detail of the steps it has taken to improve its performance. We welcome views from industry on what information they would find useful and in what format.

²⁵ <http://www2.nationalgrid.com/UK/Industry-information/Electricity-transmission-operational-data/Report-explorer/Services-Reports/>

6. Next steps and links

Chapter Summary

We welcome joint responses to this consultation and our parallel consultation on the SO's future role and structure by 10 March 2017. We are planning to consult on proposals for changes to the SO regulatory and incentives framework in summer.

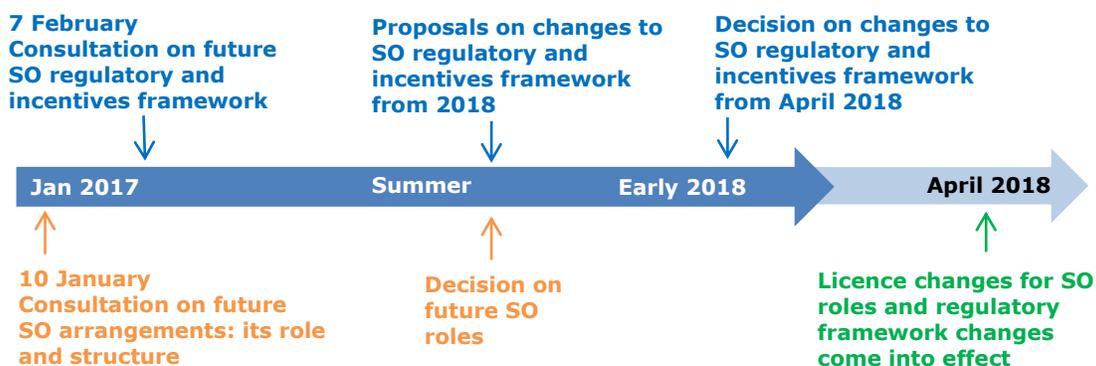
Responding to this consultation

6.1. We welcome responses to this consultation, and also our parallel consultation on the SO's future roles and structure, by **10 March 2017**. Please send both responses together to electricitySOreform@ofgem.gov.uk.

Next steps

6.2. The scope of this consultation is how we can achieve our objectives for the future SO regulatory framework from April 2018 and beyond. However, we expect our next consultation to focus on specific changes from April 2018 (feeding in stakeholder views on how we should time future changes to the framework). We are planning to consult on proposals for changes to the framework from April 2018 in summer, alongside our final policy decision the role of the SO.

6.3. We then hope to be in a position to issue a final decision on regulatory framework changes from April 2018, and a statutory licence consultation on all changes (including those relating to the SO's role) in early 2018.



6.4. We also intend to set up a series of industry events and working group meetings in 2017 to ensure we are gathering input and testing our thinking with stakeholders throughout the development of our proposals. We are hoping to hold the first event shortly and aim to send out invites soon.

Links to other work streams

Call for evidence on a Smart, Flexible Energy System

6.5. We will also take account of any findings and developments relevant to the SO regulatory framework from our joint call for evidence with BEIS on a Smart, Flexible Energy System, which closed on 12 January 2017.

6.6. The responses to this call for evidence as well as wider engagement with stakeholders will help inform whether any specific actions are needed to remove barriers, sharpen price signals and shape roles and responsibilities in the shift to a smart, more flexible energy system which meets the needs of consumers now and in the future. We expect to report on findings from the call for evidence in spring 2017.

Interim SO incentive scheme

6.7. Whilst we review our approach to incentives from April 2018, we are proposing to introduce a one year 'interim' scheme from 1 April 2017 until 31 March 2018. We published our initial proposals for this interim scheme in December.

6.8. For the interim scheme we are proposing to broadly retain the existing SO incentives framework with a number of key changes:

- A significant reduction in the Balancing Services Incentive Scheme (BSIS) cap and floor (from \pm £30million to \pm £10million) and sharing factors (from 30% to 10%), and measures to improve scheme governance;
- A greater emphasis on the role of obligations in driving SO performance by providing additional clarity on what we mean by 'efficient, economic and coordinated';
- The removal of targets for Black Start procurement costs and the introduction of a cost-disallowance process, as well as a requirement for a transparent strategy and procurement methodology;
- The introduction of new short term incentives on demand forecasting and SO to Transmission Operator (TO) funding exchanges.

6.9. More information can be found in our initial proposals document.²⁶

²⁶ Please see: <https://www.ofgem.gov.uk/publications-and-updates/initial-proposals-electricity-system-operator-incentives-april-2017>

Appendix 1 - Consultation Response and Questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.2. Responses should be received by 10 March 2017 and should be sent to electricitySOreform@ofgem.gov.uk, **alongside responses to our consultation on the SO's future structure and roles.**²⁷

1.3. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.4. Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.5. Any questions on this document should, in the first instance, be directed to:

David Beaumont
System Balancing
9 Milbank, London, SW1P 3GE
0207 901 7469
david.beaumont@ofgem.gov.uk

²⁷ Found here: <https://www.ofgem.gov.uk/publications-and-updates/future-arrangements-electricity-system-operator-its-role-and-structure>

CHAPTER ONE: Background and objectives

Question 1: Do you agree with our objectives for the future SO regulatory framework? Are there any missing?

Question 2: How can we best transition to a SO regulatory framework which meets these objectives? When should changes be made?

CHAPTER TWO: The current SO regulatory framework

n/a

CHAPTER THREE: Review of the current framework

Question 3: What lessons can be learned from our previous approaches to regulating the SO? What are the key areas where changes might be needed in future?

CHAPTER FOUR: Future framework design

Question 4: Do you believe we need to introduce more clarity about what we expect from the SO under its obligations? How should this clarity be provided? To what extent should we set prescriptive or principles-based requirements?

Question 5: Should we place financial incentives on the SO? If so, in which areas? And what form should they take?

Question 6: Should we introduce more non-financial incentives on the SO? What approaches should be taken? Do you support the introduction of a set of KPIs, and if so, what should these KPIs be?

CHAPTER FIVE: Incentive scheme governance

Question 7: How should SO incentives be governed in the future? Would you support a greater role for stakeholders in this process? How can we introduce more transparency around incentives?

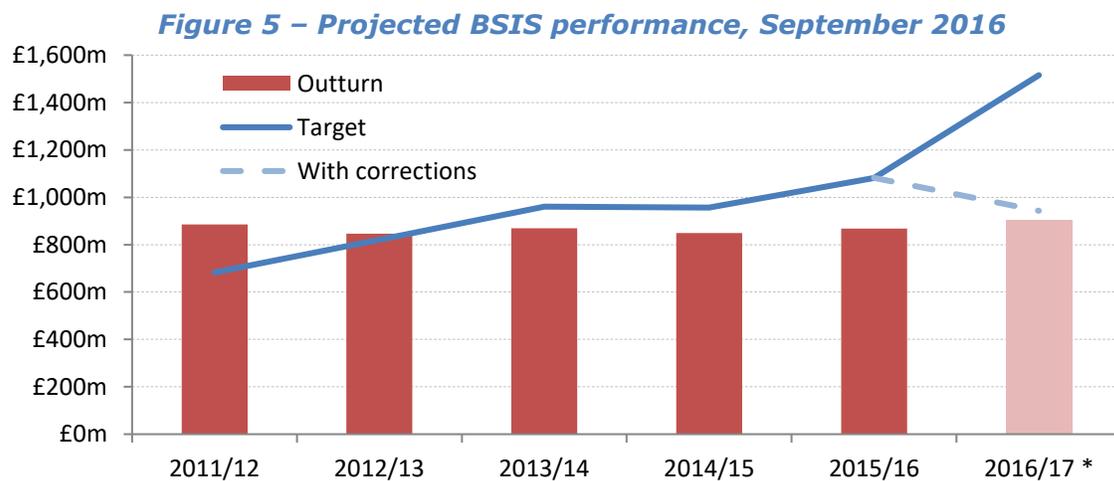
Appendix 2 - Data on historical BSIS performance

Appendix summary

In order to create additional transparency around the current SO incentives, this appendix contains data and graphs on the SO's performance under BSIS since 2011. We hope this will help stakeholders be able to better assess the effectiveness of the current incentives approach and help inform their views on what incentives should look like in future.

Annual BSIS performance since 2011

Figure 5 provides an overview of the SO's annual BSIS performance since 2011. Below this is a short summary of performance in each scheme.



	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Outturn (£m)	886	846	869	849	868	TBC
Target (£m)	678	826	960	956	1,082	TBC
Payment to / from SO (£m)	- 48.7		22.7	25.0	30.0	TBC
Cap & floor	±£50m (In Range)		±£25m (In Range)	±£25m (Cap hit)	±£30m (Cap hit)	±£30m (TBC)

* Figures for 2016/17 were projections in September 2016 and are subject to change.

2011-2013 scheme

The current modelled-based BSIS approach was first introduced in April 2011. During this scheme, BSIS performance was settled on over a two-year period with a maximum cap & floor of ±£50m. During 2011/12, the SO incurred costs which were significantly greater than its annual target (over £200m). The SO performed better

against its BSIS target 2012/13 but still incurred greater costs than its target, resulting in an overall incentive penalty of £48.7m over the two years.

2013-2015 scheme

For the April 2013 scheme, we moved back to BSIS performance being determined on an annual basis, with a maximum cap & floor of \pm £25m in each year. In 2013/15, following a number of corrections to models, the SO's performance resulted in an incentive payment of £22.7m. For 2014/15, the SO spent over £100m less than its BSIS target, resulting in it receiving the maximum incentive payment of £25m.

2015-2017 scheme

For 2015-2017 we increased the BSIS cap and floor to \pm £30m. For 2015/16, the SO is projected to beat its BSIS target and receive the maximum incentive payment. In September 2016, the projection of BSIS target versus outturn costs for 2016/17 was £1,515million compared to £887million. As a result, we became concerned that the model's performance was not fit for purpose and liaised with NGET to try to resolve this. NGET has since identified a number of model errors which should result in the target being substantially reduced by around £500m.²⁸

Observations

From these results we observe that:

- Whilst outturn costs remained relatively stable since 2011, targets have been on an upward trajectory;
- The SO has quite frequently breached or come close to breaching BSIS cap/floor;
- The magnitude of the impact of model errors on BSIS targets can be very large.

²⁸ Please see our proposals for interim incentives from April 2017 for more discussion: <https://www.ofgem.gov.uk/publications-and-updates/future-arrangements-electricity-system-operator-its-role-and-structure>

Monthly BSIS performance since 2013

We also believe it is useful to examine the SO's performance against its monthly targets, to better understand the incentives it operated under throughout the year.

Figures 6 to 9 show the SO's performance against monthly modelled targets and its cumulative performance from 2013/14 to 2016/17. Please note that the targets and outturn costs for 2013/14 to 2015/16 are those recorded at the end of each scheme year, and as such might not fully mirror the targets seen at the time (particularly as corrections have been made to the models). Please also note that the target for 2016/17 is the target before NGET's latest model corrections.

Figure 6 – Monthly and cumulative BSIS performance during 2013/14

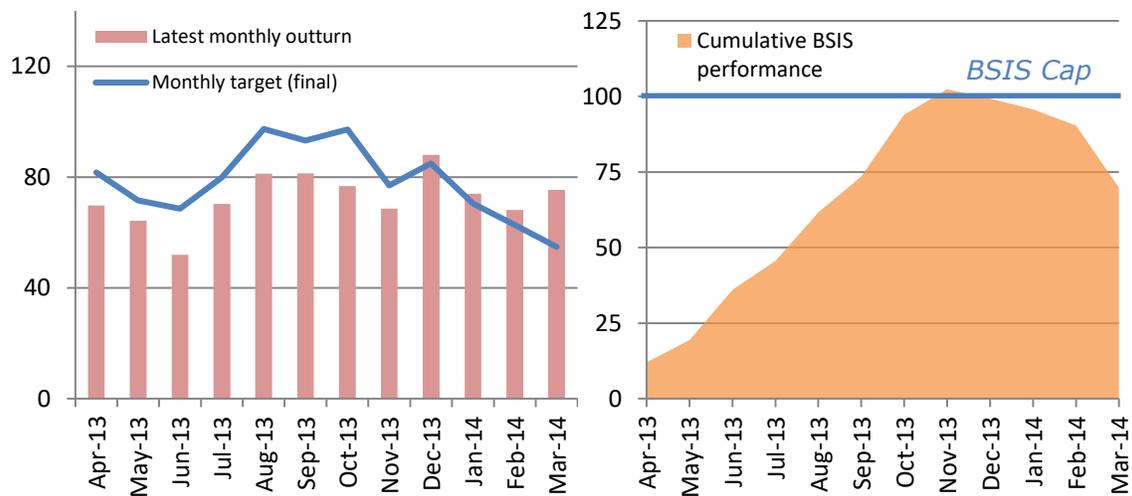
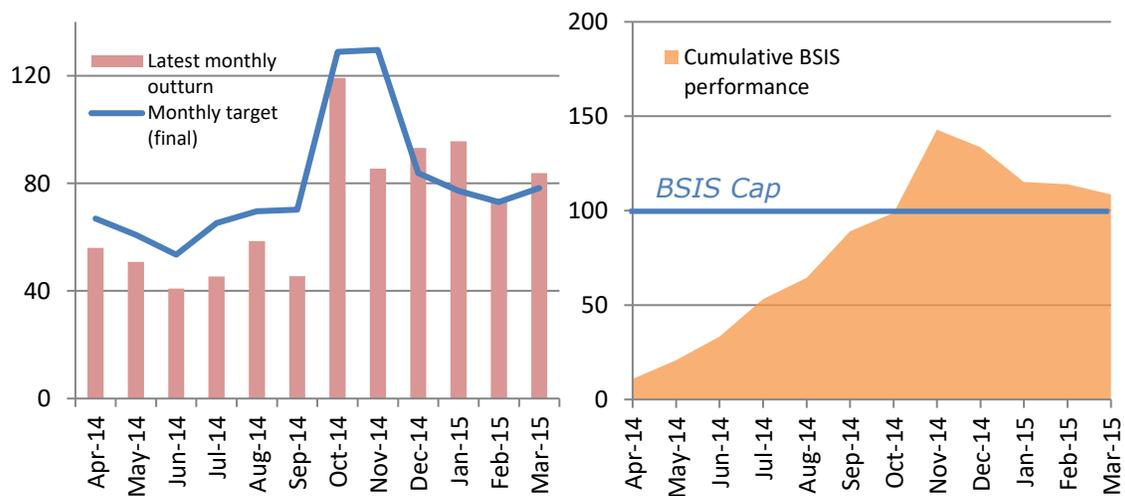


Figure 7 – Monthly and cumulative BSIS performance during 2014/15



Future arrangements for the electricity System Operator: the incentives framework from April 2018

Figure 8 – Monthly and cumulative BSIS performance during 2015/16

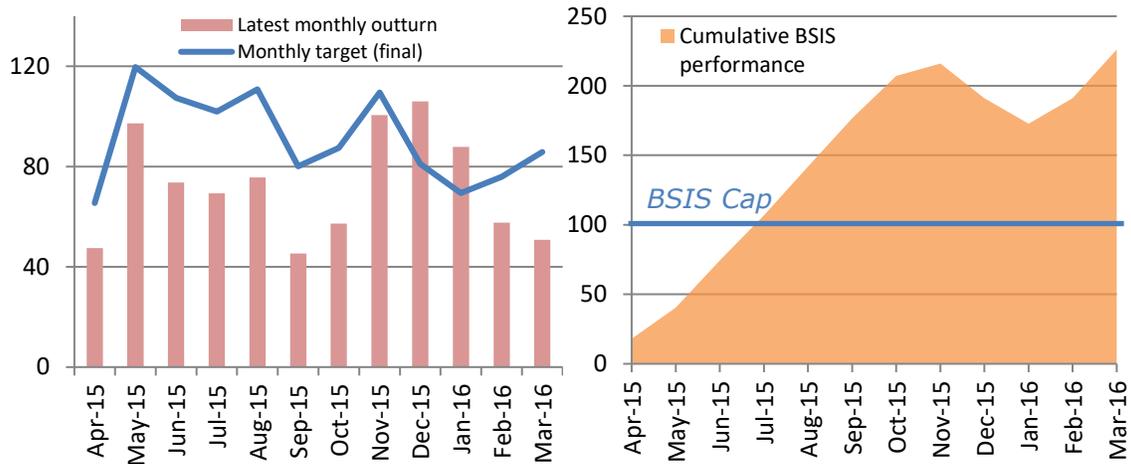
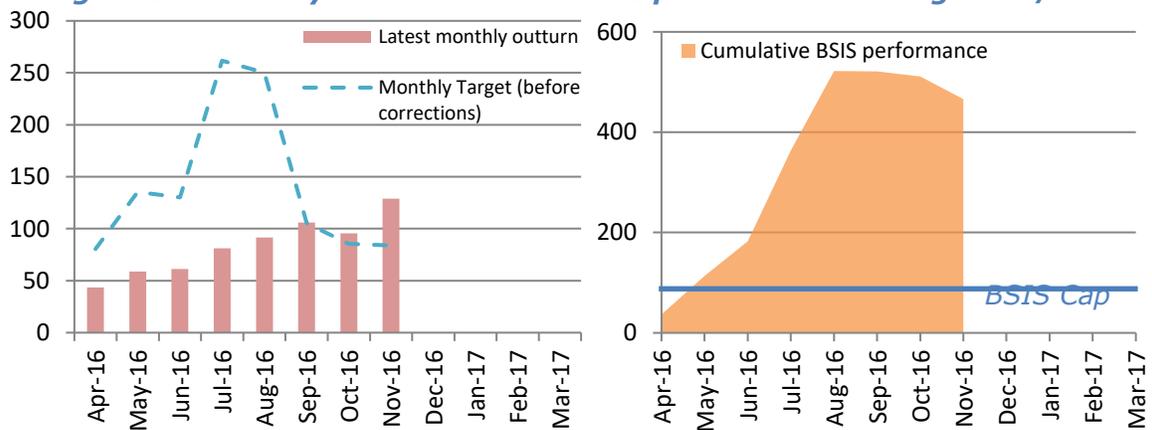


Figure 9 – Monthly and cumulative BSIS performance during 2016/17*



* Please note that this is before NGET’s corrections to the models which should result in significant reductions to the targets for 16/17.

Observations

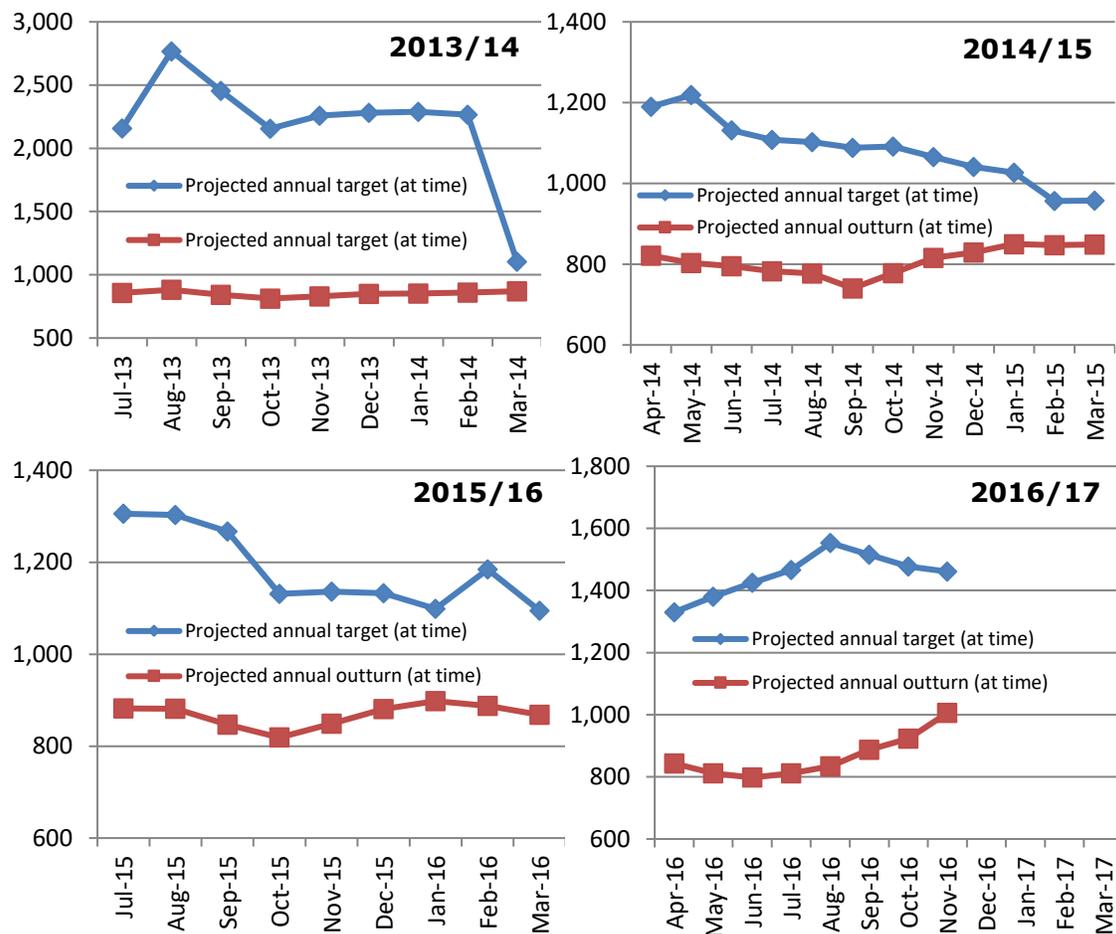
From these results we observe that the SO has a tendency to incur less costs than its monthly targets towards in the first half of the scheme year and then incur greater costs than its targets over the winter period.

Snapshots of annual BSIS forecasts since 2013

In its Monthly Balancing Services Statements (MMSS)²⁹ the SO also provides projections of what it expects its final target and outturn costs will be at the end of the year. Figure 10 shows these monthly projections of annual performance from 2013/14 to 2016/17.

It is important to note that during 2013/14 and the latter half of 2016/17 NGET was progressing fixes to models which would significantly lower targets. It therefore may have been operating under different assumed forecasts than those published in the MBSS.

Figure 10 – Snapshots of the SO’s projected annual BSIS performance in each month since 2013/14



²⁹ Please see: <http://www2.nationalgrid.com/UK/Industry-information/Electricity-transmission-operational-data/Report-explorer/Services-Reports/>

Observations

From these results we observe that:

- Projections for annual targets are typically more volatile than projections for annual outturn costs;
- There has not been a monthly period where the SO projected the difference between its annual BSIS target and outturn cost would be below the BSIS scheme cap (£100m), until the last month of 2013/14 scheme when fixes to models were implemented.

Appendix 3 – Stakeholder concerns on SO transparency and balancing services

Appendix summary

This appendix collates some of the concerns we have heard from stakeholders about the transparency of system operation and the design of balancing services. It then highlights some of the ongoing work streams where these issues and concerns are being considered further.

Introduction

The SO uses a number of tools to balance the system and to facilitate the security and quality of electricity supply across the transmission network. As well as accepting real time bids and offers (to produce more or less electricity) from providers in the Balancing Mechanism (BM), it procures a number of balancing services ahead of time through a mixture of tenders, auctions and bilateral contracts (also known as ancillary services). These are typically introduced to help meet specific system needs or accommodate new technologies. The SO can also trade energy related products and strike bilateral contracts outside and in advance of the BM where it thinks it would be efficient to do so.

The way the SO approaches system balancing directly affects competition, market signals and future investment. The real time actions the SO takes feed into charges on parties and can therefore have a significant impact on market participants' operational and contracting decisions. Whilst transparent procurement processes can help create signals for new entry and support competition and efficient investment in the long run.

Although the majority of balancing services are procured from large transmission connected generators, a growing number of smaller, distribution connected providers are participating in the market. As the system continues to evolve there may be a need for the SO to adapt existing arrangements and adopt less traditional approaches to system operation.

Feedback from stakeholders

Through our discussions with stakeholders we have heard a number of concerns about the transparency of system operation and the design of balancing services.

Below is an overview of some of the key concerns from stakeholders, including:

- **Information about balancing services** – services can be confusing and information about them sometimes lacking
- **Design of balancing services** – current approaches need to change to reflect the transforming system and to better support competition

- **Dampened market signals** - there is a lack of transparency around actions taken outside of the BM which is dampening market signals

Information about balancing services

Over time, the number of balancing service has increased. There are now over 25 different services. This includes:³⁰

- Frequency response - including Enhanced Frequency Response, Dynamic Firm Frequency Response (FFR), Static FFR (including the FFR bridging scheme for smaller parties), Mandatory Frequency Response, and Frequency Control by Demand Management
- Reserve services - including Fast Reserve and Short Term Operating Reserve (which includes several sub categories such as Committed, Flexible, Premium Flexible and the STOR runway scheme)
- Margin services – including Fast Start, BM Start-Up, Demand Turn-up, Maximum Generation and Footroom
- Voltage services – including different services for reactive power
- Wholes system services – such as commercial intertrips and Black Start

Market participants have told us that both the volume of services and information about these services is not always easily accessible or as helpful as it could be.³¹ A number of stakeholders have also commented that the details of contracts and utilisation decisions are complex and difficult to understand, and that in certain scenarios they are not available in a timely and accessible manner.

Design of balancing services

There is a feeling from a number of stakeholders that the current suite of services were designed mainly for transmission-connected generation and that they need to evolve to keep pace with the changing capacity mix. They believe they could be more flexible and better designed to allow providers to unlock the full value their capability provides to the system. In particular, some are concerned that certain products may include unnecessary restrictions or requirements (such as exclusivity clauses or minimum delivery requirements) which may prevent them from being able to efficiently 'stack' revenue streams. Others are concerned that potential overlaps between different products could be leading to inefficient procurement outcomes.

³⁰ Please see NGET's website for more information:

<http://www2.nationalgrid.com/uk/services/balancing-services/>

³¹ Please also see our commissioned report on barriers to aggregation which discusses the transparency of balancing services: <https://www.ofgem.gov.uk/publications-and-updates/aggregators-barriers-and-external-impacts-report-pa-consulting>

Stakeholders have also raised concerns about the extent to which ancillary services are procured by the SO through bilateral contracts rather than market based mechanisms. While this approach may be cheaper for the SO in the short term, in the longer term it can dampen investment signals act as a barrier to competition. Others have commented that there could be greater consideration given to how the timing of ancillary service procurement aligns with other procurement mechanisms such as the Capacity Market.

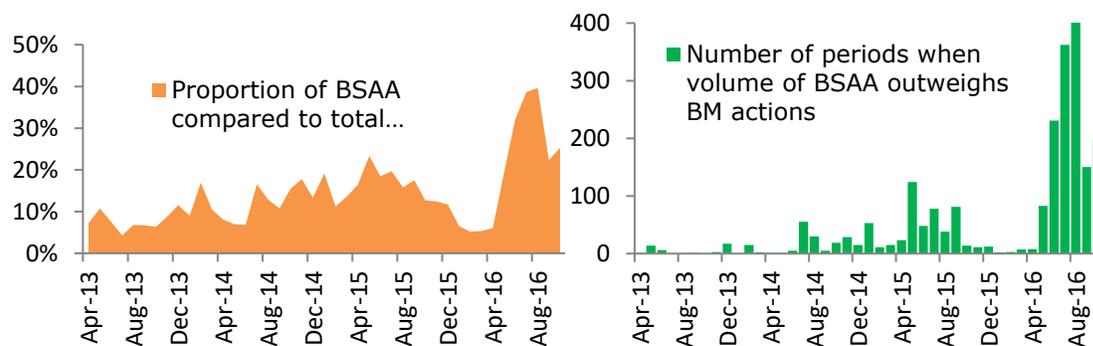
We think now could be a good time for the SO to consider how the procurement of balancing services could be rationalised and simplified to support transparency and competition in the future. Including considering the impact the forthcoming EU Electricity Balancing Guideline could have in this area.

Dampened market signals

As the system has changed, there has also been a shift towards the SO taking more actions outside of the BM (e.g. via forwarding trading, bilateral contracts or distribution-connected STOR). These trend is shown in Figures 3 and 4.

This can create issues for market participants as under the current market arrangements, non-BM actions are less visible than BM actions. This can make imbalance prices less predictable, undermining their signals. Although the trend to take more non-BM actions may in part be driven wider system and policy changes, we are aware of stakeholder views that more could be done by the SO to ensure that arrangements (such as its C16 statements) have kept pace with these changes, to ensure that SO transparency are market signals are upheld.

Figures 3 and 4 – Trend to take more non-BM (aka BSAA) actions³²



³² Certain actions taken outside of the BM are added to imbalance price stack as Balancing Services Adjustment Actions (BSAA). For more information, see National Grid's C16 statements: <http://www2.nationalgrid.com/uk/industry-information/electricity-codes/balancing-framework/transmission-license-c16-statements/>

Work streams where these issues are being considered

We are feeding in these concerns into our thinking on the design our future SO regulatory framework. In addition, for our initial proposals for incentives from April 2017, we have clarified that we consider SO transparency and competitively designed balancing services to be a core part of the SO's obligations. We are proposing to introduce some clearer requirements in this area.

In addition, we are considering responses to our joint call for evidence with BEIS on *A Smart, Flexible Energy System*. This seeks views on the potential need for new market approaches to ensure the most cost-effective procurement of flexibility services. This could have implications for the future of ancillary services, and we will therefore continue to work with the SO and BEIS to ensure a joined up approach on balancing services.

Appendix 4 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

1.2. Please send your comments to:

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