Initial Proposals for electricity SO incentives from April 2017

Consultation

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Overview:

The current electricity System Operator (SO) incentives scheme relating to National Grid Electricity Transmission plc's (NGET) external balancing costs ends on 31 March 2017. We are currently conducting an in-depth review of the incentive framework on NGET as SO to be introduced from 1 April 2018.

This document sets out our Initial Proposals for how we incentivise NGET in the interim period, 1 April 2017 to 31 March 2018.

For this interim period, we are proposing to introduce an incentive scheme based on a similar model-based target incentive framework to that used in 2015-17. We are proposing to make some key changes to improve governance around the model and to lower the value of the incentives to ±£10million.

We are also proposing to remove Black Start from the incentive scheme and to set a bespoke scheme for these costs and to introduce incentives for accurate demand forecasts and engagement between NGET and the Transmission Owners with a total value of ±£5million.

We are looking for responses to our consultation from all interested stakeholders, in particular from NGET, network owners, generators, suppliers, ancillary service providers, and consumer organisations.

Context

National Grid Electricity Transmission plc (NGET) is the electricity System Operator (SO) for Great Britain. It is responsible for balancing the electricity system by ensuring that generation on the national electricity grid matches demand on a second by second basis. To do this, NGET buys and sells energy and procures associated balancing services. It also provides valuable information to market participants, such as forecasts of wind generation and demand.

Ofgem regulates the actions of NGET to ensure its operational costs are optimised, delivering value for money to the consumer. Building on statutory obligations which require NGET to act in an economic, efficient and co-ordinated manner, we have historically driven the performance of NGET and shaped aspects of its behaviour through incentives.

We believe that there is a need for an in-depth review of the incentive framework on NGET to encourage it to focus on driving more long-term value to consumers in a changing electricity market. We are conducting this review in parallel to setting incentives for 2017/18.

Associated documents

Electricity System Operator incentives from April 2017
https://www.ofgem.gov.uk/publications-and-updates/electricity-system-operator-incentives-april-2017

Electricity System Operator Incentives 2015-17: Final Proposals
https://www.ofgem.gov.uk/publications-and-updates/electricity-system-operator-incentives-2015-17-final-proposals

Electricity System Operator Incentives 2013-15: Final Proposals
https://www.ofgem.gov.uk/publications-and-updates/decision-electricity-system-operator-incentives-final-proposals-scheme-2013

National Grid's Electricity System Operator Incentives website:
http://www2.nationalgrid.com/UK/Industry-information/Electricity-system-operator-incentives/incentives/

Contents

Executive Summary

In this document, we describe and consult on our Initial Proposals to place new balancing services incentive schemes on National Grid Electricity Transmission plc (NGET) as electricity System Operator (SO), to apply from 1 April 2017 to 31 March 2018. Over this period we will conduct an in-depth review of the regulatory framework of NGET.

NGET is responsible for balancing the electricity system on a continuous basis. The internal and external costs[1] that NGET incurs in carrying out this role are passed through to users of the system via balancing services use of system (BSUoS) charges. Consumers see these costs reflected in their electricity bills. In recent years, external costs on BSUoS have been about £850 million per annum and add around £9 to an average consumer bill. The SO incentive scheme seeks to minimise the external costs of balancing the electricity system. These incentives are part of our work aimed at achieving our consumer outcome of **lower bills than would otherwise be the case**.

During the summer we consulted on our intention to set an interim incentive based on the existing framework for 2017/18 to give us time to conduct an in-depth review of SO incentives with the aim of introducing those in spring/summer 2018. The majority of respondents thought it was a sensible interim step but stressed that we need to focus on the longer-term review.

Since our consultation, we have been able to assess the overall performance of the models for summer 2016/17. The BSIS target generated for 2016/17 was estimated at £1.5billion compared to previous outturn costs of around £850million. This represents a very significant difference, and has raised significant questions as to the ability of the BSIS models to generate an appropriate target.

We have been working with NGET, which has since identified a number of model errors (as defined under Special Condition 4C.45; this can include assumptions or calculations preventing the models from producing accurate targets) and proposed changes to the models to reduce the likelihood of these errors arising again. If we accept these changes, it will lower the target for 2016/17 by £491million.

This represents a significant improvement and gives us greater confidence that the models will be able to generate an appropriate target for 2017/18. However, taking into account the magnitude of the impact of the model errors and the wider challenges faced in modelling SO costs at a time of significant system change, we consider that the overall level of confidence we can have in the current models has been reduced. We therefore consider that some changes need to be made in recognition of this risk so that the incentive arrangements provide a good balance of risk and reward between NGET and consumers.

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[1] Internal costs are those incurred by NGET to fund the System Operator operations itself (such as staffing, IT costs). The external costs are those incurred by NGET to balance the system (such as procuring additional energy to meet demand or to manage a constraint).

We have also developed changes proposed to our regulation of Black Start given the high costs experienced this year and our view that there was a significant risk to windfall gains and/or losses from continuing with an ex-ante target approach.

In line with our summer consultation, we have developed a mechanism to allow more efficient system outages between the SO and the Transmission Owners (TO) and forecasting incentives to encourage accurate data provision to the market.

Initial Proposals

On balance, we believe it is in the interest of consumers to set an incentive scheme with improved BSIS models for 2017/18. Given the concerns expressed above, we are proposing a set of arrangements which we consider should reduce the risk of model errors occurring and should ensure that appropriate tools and incentives are in place to address errors that do occur. We are also proposing to clarify our expectations of NGET as SO in the event that the models are not performing correctly, and to reduce the overall incentive scheme value to ±£15million across all incentives. We summarise the key changes we are proposing to the incentive scheme in the table below:

Area	Description
BSIS incentive parameters	• Cap/floor of ±£10million • Sharing factor of 10%
Governance of incentive scheme	• Third-party *ex ante* and *ex post* audit of models • Formalisation of model error process giving us more tools to direct NGET to review the models
Back stop provision	• Provision that stops the incentive scheme if model performance is more than two standard deviations away from historical costs • Opportunity for NGET to justify level of performance or to rectify model errors within set timescales
Black Start	• Removal from BSIS and set up of an efficiency check process at year-end • Requirement for transparent strategy and procurement methodology • Report to be published on performance by end of year
Forecasting incentives	• Amendment to wind generation forecast incentive to reduce tendency to over forecast • Introduce day-ahead, two-days ahead and week-ahead demand forecast incentive • Total value of ±£4m
SO-TO	• Introduction of SO-TO funding mechanism • New incentive scheme on consumer savings from using mechanism effectively • Value of ±£1m sharing factor of 10%

Next steps

This consultation closes on 31 January 2017. Following our review of responses, we intend to issue our Final Proposals and consultation on the licence modifications and modify NGET's licence so the incentives are in place from 1 April 2017.

1. Background and further developments

Chapter Summary

We describe how the System Operator (SO) can significantly influence the costs borne by consumers. We also describe the process we followed so far and how this consultation fits together with our longer-term review and our other work. Finally, we describe our next steps and the structure of the document.

The purpose of electricity System Operator incentives

1.1.   The electricity SO plays a vital role in our electricity system. It has a major impact on the operation and evolution of the system, and ultimately the costs incurred by consumers.

1.2.   An important part of its role is keeping the system safe and secure in real time. To do this it takes actions to keep the transmission network frequency stable when demand and supply is imbalanced. It also takes balancing actions on different parts of the network to manage network issues and constraints.

1.3.   The external costs[2] of these actions are around £850million a year and have increased significantly over the last decade, partly because intermittent capacity has grown and more traditional sources of balancing capacity have closed. These costs are ultimately passed through to consumers through the Balancing Services Use of System (BSUoS) charges levied on market participants.

1.4.   Sitting at the centre of the electricity system, NGET can influence wider electricity system costs, and as a consequence BSUoS charges, in many ways, including by:

- Deciding which balancing actions to take at which time given the dynamics of the system and expected supply and demand
- Assessing system needs and designing and procuring balancing services to increase competition between providers
- Acting transparently, publishing information and improving system forecasts to help the main electricity market make decisions
- Working with network operators to ensure efficient trade-offs between network and system operation costs.

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[2] Internal costs are those incurred by NGET to fund the System Operator operations itself (such as staffing, IT costs). The external costs are those incurred by NGET to balance the system (such as procuring additional energy to meet demand or to manage a constraint).

1.5.   NGET has an overarching obligation to coordinate and direct the flow of electricity onto and over the electricity transmission system efficiently and economically.[3] It receives between £114million and £126million a year (in 2009/10 prices) to perform this role.[4]

1.6.   But because it is a monopoly business, NGET does not face pressure from competitors to innovate and go beyond 'business as usual' efficient system operation. We therefore set incentives to mimic these competitive pressures and encourage NGET to derive benefits for consumers. Our current scheme of SO incentives expires on 31 March 2017.

Process so far

1.7.   In August, we published a consultation on SO balancing incentives arrangements from April 2017 onwards. We proposed introducing an 'interim' SO incentives scheme from 1 April 2017 until spring/summer 2018. This is while we conduct a fundamental review of SO incentives to ensure they are right for the future given the changes we are witnessing in our system and in NGET's role.[5]

1.8.   We received 17 non-confidential responses and one confidential response. The non-confidential responses are on our consultation webpage[6] and summarised in this document.

1.9.   From summer 2016/17, the model target deviated significantly from costs. So, we delayed consulting on our Initial Proposals to investigate why this deviation was occurring and to assess whether the current framework was still fit for purpose for 2017/18 or whether alternative arrangements for 2017/18 were necessary.

1.10.   We are now in a position to consult on our Initial Proposals. The document is structured in the following manner:

- Chapter 2 discusses our proposed balancing cost incentives

- Chapter 3 discusses our proposed regulation of Black Start services

- Chapter 4 discusses our proposed forecasting incentives

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[3] See Standard Condition C16 at
https://epr.ofgem.gov.uk/Content/Documents/Electricity%20transmission%20full%20set%20of%20consolidated%20standard%20licence%20conditions%20-%20Current%20Version.pdf
[4] NGET internal costs are regulated as part of RIIO-T1.
[5] For more information please see Electricity System Operator incentives from 2017 at
https://www.ofgem.gov.uk/system/files/docs/2016/08/electricity_system_operator_incentives_from_2017.pdf
[6] Available at https://www.ofgem.gov.uk/publications-and-updates/electricity-system-operator-incentives-april-2017

- Chapter 5 discusses our proposal to introduce a mechanism to enable payments to be made between the SO and Transmission Owners (TO) and associated incentives
- Chapter 6 discusses our proposals on transparency and openness of balancing services as well as the rollout of innovation and model development

Related work

1.11. We recently published a joint call for evidence with the Department for Business, Energy & Industrial Strategy (BEIS) on a smart flexible energy system. In this, we set out our expectation that NGET must work more with the Distribution Network Owners (DNOs) and TOs to deliver a co-ordinated system, which delivers the best whole system outcome for consumers.

1.12. We believe that the SO role, as undertaken by NGET, needs to evolve to ensure it is well placed to respond to and facilitate the transformation of the electricity system over the coming decades. This means enhancing its role and making changes to effectively mitigate conflicts of interest. We have been working with government and National Grid to consider the options for greater separation of the SO role, and expect to publish our thinking on this area soon.

Updated timelines for future SO incentives

1.13. Stakeholders agreed with our view that there is a need to review fundamentally the SO incentives framework from 2018 onwards.

1.14. We have started our internal work on these new arrangements and the diagram below sets out our current thinking of timescales.

				End of RIIO-T1
Financial year	**2017/18**	**2018/19**	**2019/20**	**2020/21**
SO Incentives	**Interim**			
		New incentives framework		

Next steps

1.15. Following this consultation, we will analyse the responses from the Initial Proposals and aim to publish Final Proposals by spring 2017. Subject to responses we intend to introduce licence modifications so that the incentives can apply from 1 April 2017.

1.16. We are also aiming to publish our initial consultation on a new incentives framework from April 2018 onwards next spring.

2. Balancing cost incentives

Chapter Summary

We explain how the current model performance led us to reconsider whether this was an appropriate framework for a scheme from 2017/18 and also consider alternative options. We discuss the further work we did with NGET on the current models. We finally describe our proposal to continue to propose a BSIS-based scheme for 2017/18 but with significant changes in the governance and lower incentive value to mitigate the risk of model errors compromising the integrity of the target going forwards. We also consider the views of respondents to our August consultation.

Question box

Question 1: Do you agree with our proposals to introduce new licence requirements / guidance around SO balancing behaviour? Please explain your answer.

Question 2: Do you agree with the clarifications we propose to introduce to NGET's licence? Is there anything missing or that should be removed? Please explain your answer.

Question 3: Do you agree with our Initial Proposal of maintaining a model-based target from April 2017 until March 2018? Please explain your answer.

Question 4: Do you agree with our proposed changes to the governance and incentive parameters? Is there anything missing or that should be removed? Please explain your answer.

Background

2.1.   BSIS is the main financial incentive on NGET in respect of its external balancing costs. Under this scheme we incentivise NGET to reduce balancing costs below an efficient baseline. To do this we set a target cost for electricity SO balancing actions, based on the output of complex models which forecast the efficient level of balancing taking into account of outturn system conditions. Under the existing scheme, NGET is allowed to keep 30% of any savings below the target, and is unable to recover 30% of any costs above the target. The total amount NGET can lose or receive under BSIS in each financial year is subject to a cap and floor of ±£30m[7].

2.2.   Two models are used to calculate a monthly target for balancing costs:

- The **energy model** is an econometric-based model that uses the historic relationship between the volume and cost of balancing the system to derive a target for NGET's energy balancing actions.

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[7] For more information on the current BSIS, please see Box 1 in our initial consultation on electricity SO incentives from April 2017.

- The **constraints model** is a linear optimisation model that produces an optimal strategy for NGET to manage constraints in the balancing mechanism (BM), with a discount factor to take account of the availability of non-BM actions.

2.3.   NGET owns these models and is responsible for ensuring they set a proper target. We review the models and their methodologies at the start of the scheme and monitor NGET's use of them. If we find outputs that do not reflect the agreed methodologies we challenge NGET to justify these outputs so that we are confident they are appropriate.

2.4.   In our August consultation we discussed the pros and cons of maintaining the current BSIS from April 2017. We said we were concerned with the current approach, especially with the inherent asymmetry of information between us and NGET about the BSIS model methodologies. Nevertheless, we said we preferred to maintain the current framework during the interim period as we felt there would be overall benefits for consumers.

2.5.   We sought views from stakeholders on whether we should give NGET financial incentives during the interim period, and if so, whether we should do so by retaining the current BSIS. We also sought views on potential changes to the current BSIS, including its cap and floor and sharing factors.

Consultation responses

2.6.   The vast majority of respondents supported maintaining the current BSIS scheme for an interim period while we developed a more enduring framework. Many stakeholders said it was important to prioritise the fundamental review of incentives rather than spending too much time attempting to refine the existing scheme.

2.7.   However, several stakeholders also noted their concerns with the current BSIS. In particular, many agreed with us about the potential problem of information asymmetry about the BSIS models between us and NGET. Suggestions to mitigate the effects of this issue included lowering the BSIS sharing factors and the scheme cap.

2.8.   One respondent felt that the speed of change in the system meant there was a risk that the BSIS models would not be robust enough for the future.

2.9.   A number of responses considered that the current BSIS was encouraging a disproportionate focus on short term balancing cost reduction and not focusing enough on longer term system efficiency. One respondent highlighted its concern that NGET could be able to reduce its incentivised balancing costs at the expense of other elements not covered by the incentive scheme, potentially resulting in increased overall costs to consumers.

2.10. NGET agreed with our proposal to maintain a BSIS incentive scheme for the short-term and that it was appropriate to fundamentally review the incentive framework to account for the evolving system.

Further analysis

Heightened concerns with the current BSIS framework

2.11. Since the consultation we have performed more analysis and reviewed more evidence on the performance of the BSIS models during the 2015-17 scheme. This includes more closely examining the drivers of differences between the BSIS targets and outturn costs.

2.12. While we had some concerns on model performance for 2015/16, the marked deviation of model performance seen during summer 2016/17 made us more concerned that the current models – particularly the constraints model – were not producing accurate targets that reflected an efficient cost baseline.

2.13. As shown in Figure 1, in 2015/16 NGET incurred costs of £868million compared to a target of £1,082million, resulting in NGET hitting the BSIS incentive cap. In September 2016, the projection of BSIS target versus outturn costs for 2016/17 by September 2016 was £1,515million compared to £887million.

Figure 1 – Projected BSIS performance, September 2016
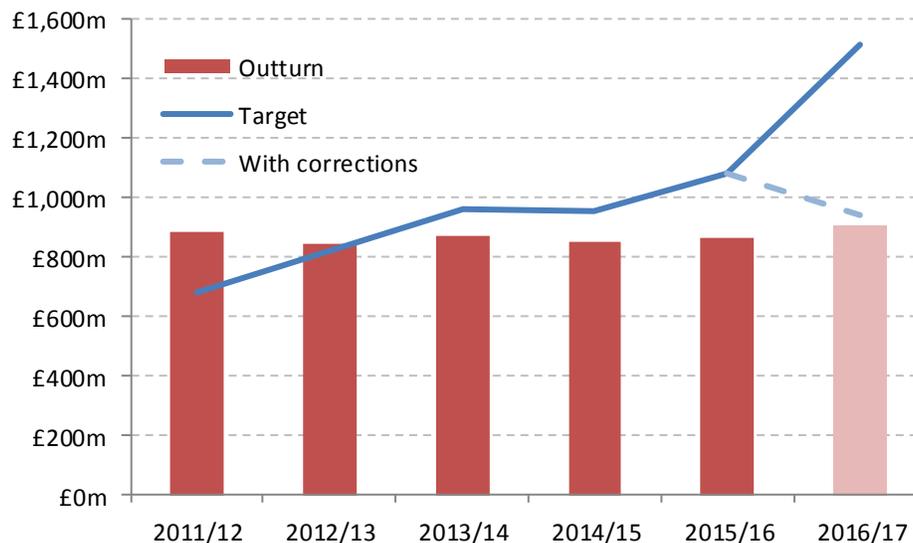
2.14. The main driver of the apparent outperformance was the constraints model which for 2015/16 indicated a £226million outperformance and for 2016/17 (April to September), an outperformance of £541million.

2.15.   We became concerned that the model's performance was not fit for purpose and liaised with NGET to try to resolve this. NGET identified a number of model errors (as defined under Special Condition 4C.45)[8] which will result in the target being materially reduced. NGET found a typographical error in one constraint boundary, errors on the simulation of the dispatch of biomass in the market, as well as some errors on its approximation of Solar PV location in the South East and on some constraints boundaries from the year-ahead outage plan.

2.16.   Combined, these corrections have reduced the BSIS target in the period April to October for 2016/17 by £491million to £561million, compared to outturn costs of £545million. This means NGET is now currently outperforming the incentives by £4.9million rather than £30million before the corrections. This is a good outcome for consumers.

2.17.   During the course of our investigation it became apparent that it is difficult to identify the cause of a model outperformance. In addition, it highlighted that the current framework gives us too few levers to direct changes or investigations into the models and places too much emphasis on NGET to identify errors. While NGET holds the key tools to correct the model, the framework does not place on it strong incentives to do so besides the threat of enforcement. It also does not provide a safety net in the event that a model error cannot be identified.

2.18.   As a result of this, we considered whether BSIS continued to be the most appropriate way of incentivising NGET for the interim 2017/18 scheme. We considered alternative options for incentivising NGET (discussed below) as well as changes to the BSIS scheme that could address some of the concerns.

Clearer expectations on NGET

2.19.   We considered how to provide more clarity to NGET on what we expect from it as part of the baseline service expectation of economic and efficient. We believe this is important in the event that the models are not operating in line with expectations and as such it is harder to benchmark SO performance.

2.20.   We considered whether introducing **new licence requirements and/or guidance** on the behaviour we expect NGET to display in order to meet its C16 obligation would strengthen NGET's ability to deliver value to consumers.

Options considered

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[8] Under this condition if the licensee considers that an error or errors have arisen which prevent the SO Models from appropriately reflecting the SO Methodologies […] or if the licensee considers that an input error or errors into the SO Models have arisen as a result of information provided by any third party […]. This can include assumptions or calculations preventing the models from producing accurate targets.

2.21. We analysed a number of options to regulate NGET's balancing:

- **Cost disallowance mechanism** – where there would be an explicit power in the licence for us to disallow the recovery of costs we believe are inefficient

- **Discretionary reward process** – where we would decide at the end of the scheme year whether to reward NGET for savings it can justify as beyond business as usual[9]

- **Fixed ex-ante target** – where we would set a fixed target ex-ante using historical incentive costs (we estimated using the average costs for the past five years - £842million) and a 'dead band'[10] around the target to account for variance of balancing costs

- **Improvements to BSIS models and structure** – where we would set a target on improved BSIS models but make changes to the incentive structure to reflect our level of confidence in the model and the governance shortfalls

- **No incentive scheme** – where we would use a combination of historical cost trends, analysis of system conditions, narrative from NGET, and feedback from market participants to identify how it is performing. We would also use the BSIS sub models to assess cost drivers

2.22. We concluded that neither a **cost disallowance mechanism** nor a **discretionary reward process** would be feasible or desirable in these timescales. That is because it would be difficult to develop and implement the mechanisms in time for the start of the next incentive scheme. Moreover, administering these more resource-intensive schemes would detract from our long-term review, which stakeholders suggested should be the focus of our work.

2.23. It would be possible to introduce a **fixed ex-ante target**. Under this alternative, we would lower the sharing factors to account for the inherent uncertainty with this approach. The main advantage of this is that it would be easy to implement and administer. This would allow a greater focus on our fundamental review of incentives.

2.24. However, there is a risk that 2017/18 is very different from the previous five years because of weather or changes in the system (such as the introduction of the Capacity Market). This could result in an inaccurate target and disproportionately high windfall gains or losses for NGET.

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[9] We considered these approaches prior to the 2013 SO incentives scheme, before eventually deciding to continue with the current BSIS framework. For more information see: https://www.ofgem.gov.uk/ofgem-publications/39924/dac-and-esor-consultation-document.pdf
[10] NGET would then only be rewarded/penalised it costs felt outside of this range, otherwise NGET performance would be £0.

2.25. On **no financial incentives**, we considered setting new obligations on NGET to publish reports on its actions and behaviours. For example, we could require it to explain the reasons why balancing costs have changed from previous years in its Monthly Balancing Services Statements (MBSS). We also considered introducing requirements on NGET to report regularly what it is doing to lower costs for consumers.[11]

2.26. The benefit of this option is that it would remove the potential for windfall gains/losses. It could also transition the focus of NGET to whole system and more long-term cost savings in line with our future expectations for NGET.

2.27. A key risk with this option is that a lack of upside for NGET could result in missed opportunities for consumer savings during 2017/18. However, given the short nature of the scheme, we believe there is less scope for NGET to develop new measures which clearly go beyond efficient balancing behaviour during this period. Nevertheless, the scale of balancing costs would mean that any change in cost resulting from lower incentives can have a significant impact on consumers.

Initial Proposals

2.28. On balance, we propose to continue with a BSIS models target approach for 2017/18 with material changes. The process we have been through with NGET and the associated identification of model errors along with proposed improvements to the models represent a significant improvement and give us greater confidence that the models will be able to generate an appropriate target for 2017/18.

2.29. However, taking into account the magnitude of the impact of the model errors and the wider challenges faced in modelling SO costs at a time of significant system change, we consider that the overall level of confidence we can have in the current models has been reduced. We therefore consider that some changes need to be made in recognition of this risk so that the incentive arrangements provide a good balance of risk and reward between NGET and consumers.

2.30. In particular, we are proposing significant changes to the incentive value to reflect the reduction in certainty over the model target. We also intend to change the governance arrangements to make sure the incentive scheme is working properly throughout the year.

2.31. We see this as a short-term approach for this year and continue to believe that an in-depth review of NGET incentives is necessary to ensure that the arrangements are fit for the roles we expect NGET to meet. We are working on this longer-term review and aim to publish a consultation on our thoughts spring 2017.

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[11]Under this option, if our monitoring identifies that NGET has not behaved in line with its obligations then we would consider pursuing enforcement action. This could result in a fine of up to 10% of NGET's total revenue.

2.32. The main elements of our proposal for the BSIS scheme is to retain the existing model derived target based incentive scheme with changes to:

- Improve the accuracy of the models
- Reset the incentives parameters: cap and floor of ±£10million, and sharing factor of 10%
- Improve governance of the models: independent audits, stronger model error provisions and an ability to stop the incentive scheme if models not working
- Improve licence obligations to provide greater clarity of our expectations regarding NGET's SO role

2.33. We discuss each of the proposals in detail below.

BSIS improvements

2.34. Besides correcting the model errors for 2016/17, NGET has committed to enacting three changes that will reduce the likelihood of similar errors in the future:

- Update models for demand data closer to real time;
- Calculating constraints boundaries closer to real time;
- Explicitly modelling the role of intertrips and interconnectors on constraints management.

2.35. We consider these to be important changes that will improve the accuracy of the target. We will work with NGET to consider whether other improvements are appropriate before April 2017.

Incentive parameters

2.36. We are proposing to adjust the incentive parameters to reflect the level of confidence we have in the models and the potential for similar errors to occur, and the resulting potential risk of windfall gains and losses to NGET and consumers.

2.37. We are proposing to lower the cap and floor from ±£30m to ±£10m. We are also proposing to lower the sharing factor from 30% to 10%. These symmetrical changes will lead NGET to continue to be incentivised for ±£100m around the target.

2.38. We believe the sharing factor and cap and floor are appropriate for driving SO performance on minimising balancing actions while protecting consumers from windfall gains or losses caused by model inaccuracy. We continue to recognise the value strong financial incentives can have in driving performance. Incentive parameters, however, need to recognise not only the challenging nature of

outperformance but also the confidence in the framework on driving value for consumers.

Governance

2.39. We are also proposing to introduce some key changes to the incentive governance arrangements to increase model confidence and let problems be identified earlier and corrected promptly.

2.40. Any methodology proposed by NGET to set the target should be supported by a report from an independent party on how accurate the calculations are, and whether the assumptions are appropriate. This independent report will give us a third-party view of whether the models are fit for purpose before we approve them.

2.41. For managing the incentive, we propose to introduce processes to formalise how we work with NGET during an incentive scheme, mainly:

- A requirement for NGET to submit to the Authority monthly accurate data on the balancing costs and the ex-post data required to update the models. We are also proposing that the template submission from NGET be approved by the Authority and for the Authority to have the power to direct NGET to include certain information in the report.

- A requirement for a final independently audited submission to the Authority by 1 May 2018. However, we do not intend to change the mechanism that allows for corrections of past incentive scheme performance if there was an error. This should be supplemented by a final model run submission at the end of the reconciliation period.

2.42. We are also proposing to expand and formalise the process for identifying and correcting model errors. On that, we are proposing to:

- Clarify that we expect NGET to inform us of a model error within two weeks of identifying it and to correct it promptly. Introduce the requirement for the timetable for the error correction to be approved by the Authority.

- Clarify the definition of a model error along the following lines - a model error is any input, assumption, calculation, or modelling structure that prevents the models from producing a target that reflects the cost baseline expected from an economic and efficient SO.

- Introduce a requirement for NGET to investigate any model if directed by the Authority and to resubmit it for approval. If the Authority is not satisfied with the quality of the evidence provided by NGET, we propose the Authority to have the power to direct NGET to get independent third-party scrutiny over the model and submit it as additional evidence to the Authority.

- When NGET informs us of an error or the Authority directs NGET to investigate an error, the incentive scheme will be on hold until the Authority directs otherwise.

2.43. Because model errors can be difficult to identify but lead to significant windfall gains or losses, we are proposing to set a backstop provision. Under this provision, the incentive performance for any month would go to zero if NGET is outperforming the incentive or the scheme floor prorated per month (-£833,000) if it is underperforming in the event that:

- The target for any particular month falls outside an ex-ante threshold, and

- NGET cannot provide convincing evidence as to why the target has deviated from the historical benchmarks or corrected a model error following the process set out in paragraph 2.42.

2.44. For the threshold, we believe that applying two standard deviations from historical costs for the previous five years would provide an appropriate balance between not overusing this mechanism but providing necessary protection to consumers. However, we are open to views about whether this an appropriate benchmark to use.

Clarity of expectations

2.45. We are also proposing to amend NGET's licence conditions and issue a guidance document to clarify our expectation of NGET's baseline balancing behaviour as part of its economic and efficient obligation standard condition C16 (see Box 1). We hope that this clarification would make it easier for NGET and stakeholders to understand what we expect of NGET as SO. This will become increasingly relevant to benchmark NGET performance in the event that the models are not performing adequately and we are following the governance as set out in paragraphs 2.42 and 2.43.

Box 1: New 'Balancing principles' licence conditions

Condition C16: Procurement and use of balancing services

1. The licensee shall co-ordinate and direct the flow of electricity onto and over the national electricity transmission system in an efficient, economic and coordinated manner.

"This includes, but is not limited to:
- taking the most efficient action to balance the system and address system issues, taking into account the impact these actions have on competition in the electricity market and on the wider system efficiency. This must include a consideration of
  - the costs of contracting with a provider or network operator outside of the Balancing Mechanism versus the likely costs that would be incurred by resolving the issue using the Balancing Mechanism;
  - the impact the action would have on electricity market price signals, the behaviour of electricity market participants and overall electricity transmission system efficiency.
  - The impact the action would have on the whole system efficiency, including on frequency and voltage patterns of distribution networks and have a positive impact from a whole system perspective
- optimising the timing of transmission outages on the electricity transmission network;
- publishing the information electricity market participants need in order to make efficient operational and investment decisions;
- producing and publishing reliable and unbiased forecasts of future margins, demand, wind generation and balancing costs;
- ensuring the procurement of balancing and ancillary services is as transparent as possible;
- ensuring that balancing and ancillary service product requirements do not inefficiently restrict new and existing providers from competing;
- anticipating future system requirements and using and developing competitive approaches to procuring balancing services wherever this is in consumers best interests"

3. Black Start

Chapter Summary

We describe our proposal to remove Black Start from the BSIS incentive and to set a framework that allows close scrutiny of NGET actions by us and industry and drives long-term value for consumers.

Question box

Question 1: Do you agree with our proposal to remove Black Start from BSIS? Please explain your answer.
Question 2: Do you agree with the principles of our Black Start regulation? Should we add or remove any principle? Please explain your answer.
Question 3: Do you agree with our proposed regulatory framework for 2017/18? Please explain your answer.

Background

3.1.   Black Start is the process used to recover from the shutdown of large parts (or all) of the transmission system. NGET has an obligation under the Grid Code to ensure sufficient Black Start capability is available and to set Local Joint Restoration Plans with relevant parties (including TOs and DNO).[12]

3.2.   Black Start costs have until now been incentivised as part of BSIS. An *ex ante* cost target has been agreed for each two year period on the basis of our scrutiny of NGET's best estimates and forecasts before the beginning of the scheme and NGET has then had the opportunity to attempt to beat the target through efficient contracting. Given the uncertainty of these costs, we have a mid-scheme review for availability, capital contributions and warming costs.

3.3.   Black Start costs were very predictable for a number of years, but have now increased from £19.2million for 2015/16 to up to £147million for 2016/17 in part as a result of changes to the GB generation mix.[13] This sudden and significant increase

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[12] NGET procures its Black Start service in line with a published Black Start policy, which sets out the minimum requirements for the service as a whole and for service providers. NGET's policy involves a zonal approach which divides the country into sub-regions, all of which must have sufficient Black Start capability in place.
[13] Costs are not certain until the end of the year given that warming patterns or claw-backs in some contracts might lower costs.

demonstrates that costs are likely to be volatile and unpredictable. Figure 2 below summarises the cost of Black Start service provision over the last five years.

Figure 2: Black Start costs since 2011/12
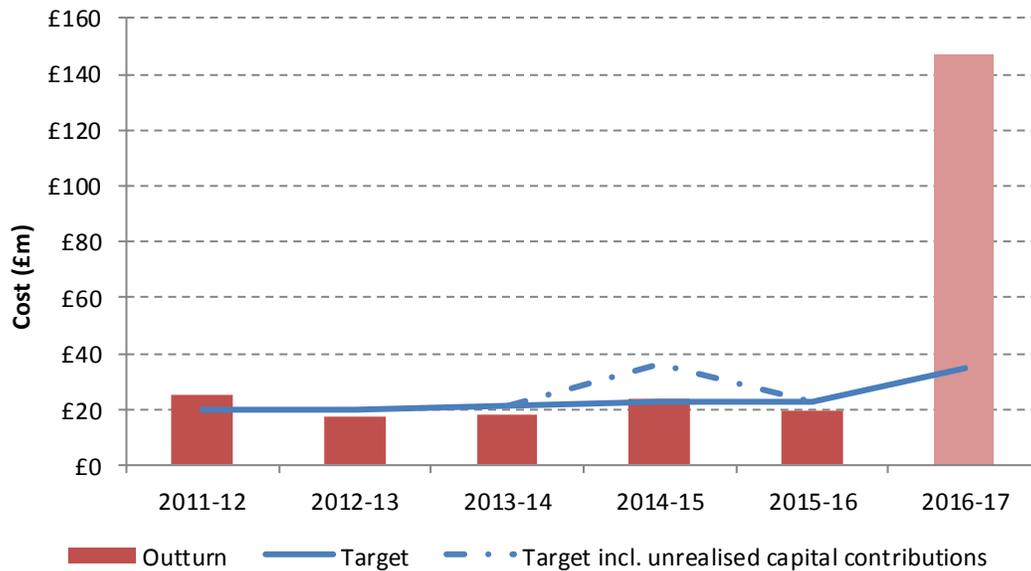
3.4.   In our initial consultation this summer we asked stakeholders for views on the best way to incentivise NGET to incur efficient costs when procuring Black Start from April 2017. We also proposed to review Black Start incentives specifically in light of increasing costs.

Consultation responses

3.5.   We received 16 responses on Black Start. Stakeholders expressed views that our approach to incentivising Black Start needs to change considerably. They believed that in the short term, the current approach is not appropriate. Many considered that an *ex post* assessment of costs[14] is preferable until an in-depth review of the arrangements is done.

3.6.   Those preferring a continuation of a target-based approach recognised that costs are unlikely to remain at previous levels and that they are unpredictable. As a result, they called for higher targets, more or stronger uncertainty mechanisms such as the Mid-Scheme Review and Income Adjusting Event, and a lower sharing factor to reduce risk.

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[14] In an *ex post* assessment the Authority reviews the costs incurred by NGET at the end of a specified period (normally a year) and normally includes the ability for the Authority to disallow costs that are not economic and efficient.

3.7.   NGET stated that "*Black Start incentives require fundamental revision.*" This is due, in its view, to the short-term time horizon of the current scheme and the risk exposure that it creates for NGET. NGET suggested that longer-term incentives could be the appropriate way forward. In the short term, however, NGET recommended that a financial incentive "*would continue to focus SO attention on procuring adequate economic Black Start services*" and that this financial incentive should be continued as a component of BSIS.

3.8.   Some respondents called for all incentives to be removed from Black Start altogether and instead be replaced by licence obligations on NGET to minimise the distortive effects of procurement on wider markets.

3.9.   In addition to the discussion on costs assessment, stakeholders also raised significant concerns over several issues around Black Start:

- **Transparency** - in particular lack of transparency of Black Start requirements, the procurement processes run by NGET, the costs of the contracts and the payments to generators, and reporting to Ofgem and market

- **Procurement process** - use of bilateral contracting instead of competitive tendering or auctions; market distortion, lack of liquidity and SO proactivity in pursuing new providers and innovation

- **Strategy** - lack of a long-term strategy to ensure enduring and robust Black Start capability having regard to the need for new investment and the transition to new generation technologies

Further analysis

3.10. We agree with stakeholders that the current approach to incentivising Black Start may have contributed to a number of suboptimal outcomes (as detailed in paragraph 3.9 above) and influenced higher than historical costs for Black Start this year. As such, we have assessed the key objectives of our regulation of Black Start and then assessed how a number of approaches meet them.

Key objectives of our regulation of Black Start

3.11. Overall, our objective on Black Start regulation is to ensure that NGET can make decisions that allow the optimal level of Black Start provision at the lowest possible cost to consumers. Where there are trade-offs between additional protection and lower costs, we aim that our regulation supports an accurate cost-benefit analysis weighing in consumer preferences for security. We have distilled this high level principle into a number of objectives summarised in Table 1 below:

Table 1: Objectives of our regulation of Black Start

Objective	Rationale
Clear, robust, and technical decision-making	Our regulation should ensure that decisions on the level of protection to consumers are justified through evidence-based technical assessment of the network needs and consumer preference. NGET, industry and consumers should have clarity on what is being procured and for what reason. Where NGET makes procurement decisions and Ofgem determines cost recovery, this should be based on clear and robust methodologies.
Diversification and optimisation of restoration approach and portfolio of service providers of Black Start	Our regulation should foster NGET procuring the most effective portfolio of service providers across the network having regard to potential changes in market conditions. Our framework should also support and enable innovative ways of restoration that minimise any disruption to consumers.
Transparency of approach, procurement, and service status	Our regulation should make sure there is transparency to the market, in particular on what is being procured. That is because transparency gives market participants better signals and opportunities to enter the market and increase competitive pressures.
Flexibility of approach for the licensee	Our regulation should enable NGET to consider a variety of procurement and strategy options and choose the most efficient combination to achieve the necessary level of resilience and take into account changes to the network and technology.
Efficient costs	Our regulation should ensure that the costs incurred by NGET, and the system as a whole in relation to Black Start are as efficient as possible to minimise the amount passed through to consumers for protection.

Consistent standards across GB	Our regulation should ensure NGET procures adequate levels of protection and grid resilience for all of GB. All parts of the country should have adequate levels of protection against a transparent standard.
Optimal integration of Black Start in the wider policy framework	Black Start provision is one of a range of potential revenue streams for service providers. Our regulation should facilitate the efficient integration of Black Start into the wider market arrangements.
Promotion of competition	Our regulation should encourage the promotion of competition for service provision of Black Start so as to make it as competitive as possible. The maximisation of competition should contribute to lower cost to consumers.
Minimising distortion in wider markets	Our regulation of Black Start should ensure that payments to service providers do not unduly distort the wholesale, balancing and capacity markets.

Approaches considered

3.12. We have considered several alternative approaches to regulating Black Start from cost pass-through and greater use of our enforcement powers to licence and code changes to make the Black Start provision mandatory on all or some market participants.

3.13. For the interim period, we considered two main options:

- Continue with an **ex-ante target** for at least some costs (SO preference)

- Developing an **ex-post efficiency check approach** underpinned by transparent methodologies

3.14. We have strong concerns with using an *ex ante* target in the short term. This is because the recent volatile costs mean that we do not believe that we could set a credible target without the potential for large windfall gains and losses. This could result in significant windfall gains or losses to NGET and not achieve our objectives.

Also, we believe the *ex ante* approach for one year would focus NGET too much on short-term decisions rather than the enduring system needs for Black Start which would not result in either a higher quality of service or lower cost for the consumer in the longer term. NGET however, believes that the benefit of having an incentive outweighs those risks by establishing a clear measurement tool for SO performance in delivering the service.

3.15. We then assessed whether a cost disallowance underpinned by transparent methodologies would allow NGET to turn its attention to the long-term needs of the system while maintaining a strong oversight of the costs to be borne by consumers. To make this credible, it would be necessary for NGET to produce documents ahead of time setting out its vision for the future of Black Start provision and how it aims to get there (strategy) and how it will negotiate hard on behalf of consumers (procurement methodology).

3.16. If NGET does not comply with these standards, we would be able to disallow those costs and enforce against NGET if it is not providing the appropriate level of protection to consumers. We acknowledge that the downside of such style of regulation is that NGET might focus more on ensuring its actions are tracked and can be justified to us clearly rather than take innovative actions.

Initial Proposals

3.17. On balance, we believe it is appropriate to remove Black Start from BSIS and remove the target-based approach of incentivising NGET for this interim scheme. We propose to replace it with a system where NGET sets out an approved strategy and procurement methodology at the start of the year and submits to the Authority evidence in an audited report on how it complied with its obligation. This report would form the basis for the Authority's decision on whether to disallow the costs incurred by NGET.

3.18. In addition to this, we propose to continue working on the merit of introducing more licence obligations and potentially financial incentives to drive desirable behaviours relevant to the objectives for future Black Start incentives. Table 2 summarises our Black Start policy for 2017/18.

Table 2: Summary of our Initial Proposals

SO requirement	Description
Black Start strategy	Requirement for NGET to develop and publish a Black Start strategy approved by the Authority to be reinstated. The strategy should explain how NGET is meeting all the principles set out in this chapter in the short, medium and long-term. The strategy should be reviewed annually to

	reflect a changing system.
Black Start Procurement methodology	Requirement for NGET to set out how it will select and contract Black Start service providers and foster a market that minimises the cost to consumers of adequate Black Start capability. This methodology should be submitted to the Authority for approval.
Annual audited report	Requirement to submit to the Authority and publish an annual report on how NGET has complied with its strategy and procurement methodology and the costs incurred to do so. This report should be supported by an independent auditor's report.
Efficiency check	Process by which the Authority will assess the annual report submitted by NGET with the ability for the Authority to seek further information and disallow any non-compliant costs up to 3 months after the submission of the report.
Licence obligations/incentives	Further work with industry ahead of 2018 with the possibility of introducing new obligations or incentives on desirable SO behaviours.

3.19. We believe these proposals support the delivery of our objectives and address most stakeholder concerns. We believe it will encourage NGET to develop a long-term strategy for Black Start that recognises system dynamics and contributes to driving down costs while improving grid resilience and system security.

3.20. We also propose to continue monitoring the effectiveness of this framework and its impact on competition and to work with industry to make any amendments necessary from April 2018 to ensure Black Start provision is effective.

4. Forecasting incentives

Chapter Summary

This chapter describes our proposal to amend the wind generation forecast incentive by introducing a mechanism to reduce the current propensity of forecasts to overestimate the amount of wind generation in GB. Secondly, we are proposing to introduce demand forecast incentives for the day-ahead, two-days ahead and week-ahead demand forecasts with a similar provision to incentivise a reduction in over forecasts. We are also proposing to provide a value of ±£1m for each forecast.

Question 1: Do you agree with our amended wind generation forecast incentive proposal? Are there any elements you feel should be changed or that are more relevant to you? Please explain your answer.

Question 2: Do you agree with our proposal to introduce demand forecasting incentives in this interim scheme? Are there any elements you feel should be changed or that is more relevant to you? Please explain your answer.

Question 3: Do you have any additional criteria that you would propose for the Quarterly Forecast Report? Please explain your answer.

Question 4: Do you agree with how the parameters for the incentives are calculated? Should we consider anything else when setting the target?

Question 5: Do you believe we should introduce an additional mechanism to counter the incentive to under or over-forecast in any given month to maximise incentive value? Please explain your answer.

Background

4.1.   Short term demand and wind generation forecasts by NGET are vital for balancing efficiency. Accurate forecasts allow better SO planning of balancing actions (a core SO function). They also (if published) help market participants self-balance and respond effectively to price signals. Inaccurate forecasts can send misleading signals which can lead to inefficient trading and dispatch, creating unnecessary costs to market participants, and ultimately to consumers.

4.2.   In our previous consultation, we stated our belief that there may be merit in continuing the monthly wind generation forecast incentive, while also increasing granularity by including an additional shorter term incentive (for example, daily or weekly). We also suggest that a new incentive on demand forecasts could be designed in a similar way to the amended wind generation incentive.

Consultation responses

4.3.   NGET's response agreed with our suggestion of making amendments to the wind generation forecast incentive as well as creating a new demand incentive which focuses upon how NGET engages with industry. It stated that for both incentives, the performance metrics must reflect an appropriate risk/reward balance.

4.4.   The majority of responses to our question on a proposed demand forecast incentive saw merit if it focuses on improving forecasting accuracy for intermittent and embedded generation. One stakeholder agreed with our initial thinking that a new incentive on demand forecasts could be designed in a similar way to the existing wind incentive.

4.5.   Responses were split on the timing of this new incentive with some suggesting that this should form part of the longer term review instead. There was an interest in potentially incentivising other organisations to participate in demand forecasting, notably DNOs as well as potentially basing any new incentive upon the Electricity Margin Notice[15] forecast or gross demand. Responses support a range of timescales: hour ahead, day ahead and week ahead at a granularity level of settlement period to settlement period.

4.6.   Two responses dismissed the idea of a demand incentive since there are existing licence provisions to govern SO activities. They considered that capping and flooring demand forecasts may also hide the true costs and confuse the issues that the future system overhaul should clarify.

4.7.   The majority of responses to our question on the wind generation forecast incentive saw merit in maintaining it; however opinion was split as to whether it should be changed or not in the short term.

4.8.   Just over half the responses agreed that there needs to be a change to the incentive. A variety of reasons were provided ranging from greater efficiency gains, the inclusion of day ahead solar generation, basing the incentive upon day ahead forecasting with settlement period granularity and the incentive taking into account the curtailment actions NGET reasonably expects to take.

4.9.   Fewer than half the responses did not believe that there needs to be any changes made. Two stated that we should not have this incentive at all. Similar reasons were given as for the proposed demand forecast incentive: accurate wind generation forecasting provides significant benefits for NGET anyway and incentives should not target SO internal developments.

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[15] Formal Grid Code communication that informs the market that NGET's reserve is not as big as it would like it to be at a particular time of that day. Previously known as a NISM (Notice of Inadequate System Margins)

4.10.   Several responses wished to keep the status quo as any such incentive should be part of the longer term review instead and the incentive cannot be improved further due to the unpredictability of wind conditions.

Further analysis: wind generation forecasting

4.11.   We have assessed how effective the wind generation forecasting incentive has been through a review of NGET's performance. Under the 2013-15 incentive scheme, NGET outperformed the incentive, earning over £401,000 in 2013/14 and nearly £825,000 in 2014/15. SO performance has resulted in an outperformance of the target by between 0.7 percentage points and 1.4 percentage points.[16]

4.12.   Due to this outperformance, the percentage error targets were reduced for 2015/2016. Under these tighter targets, NGET has underperformed against the incentive so far losing approximately £224,000 for summer 2015 and £249,000 for summer 2016. NGET also underperformed in winter 2015/16 losing approximately £31,000.[17]

4.13.   These error forecast figures indicate that there has been no significant improvement in performance in this incentive scheme. SO performance has in fact worsened in both summers and remained broadly in line with the last incentive scheme performance.

4.14.   In addition, there are concerns from market participants that NGET is more likely to over-forecast than under-forecast wind generation. It has been reported that NGET's wind forecasting throughout July 2016 has been causing concern for traders due to its "consistently over-optimistic wind outlook [that has] been driving up the price of day-ahead power, because prompt traders had assumed the physical output would be lower than was being communicated."[18] Expectations of high wind should suppress prices in the day-ahead market, however the industry believes that National Grid is overestimating to such an extent that a risk premium is being included in the price.

4.15.   This over-estimation by NGET is borne out by the data (based on hourly totals per month). Figure 3 shows that between March and July this year, National Grid over forecasted on average 72% of the time.[19]

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[16] NGET outturned on average at 4.01% and 3.09% against targets of 4.75% and 4.50% during the summer of both years and 5.55% and 4.58% against targets of 6.25% and 6.00% for the winters of both years.
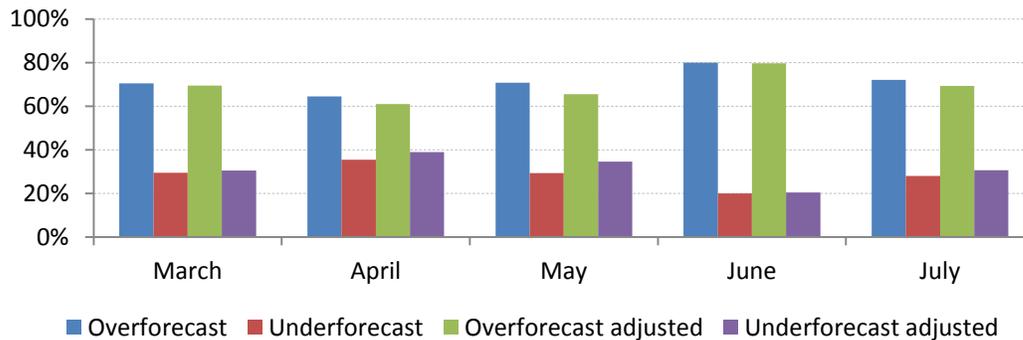
[17] NGET outturned on average at 3.91% and 3.98% against targets of 3.25% and 3% during the summer of both years and at 4.67% against a target of 4.75% for the winter period.

[18] Heren article 9 Aug 2016

[19] The Adjusted forecast excludes wind units constrained.

Figure 3: NGET Wind Generation over/ under forecasting

Further analysis: demand forecasting

4.16.   NGET publishes short term forecasts based upon the 48 daily settlement periods at the day/day ahead, 2-14 days ahead and 2-52 weeks ahead stages.[20] Market participants are concerned with the forecast error level of its demand forecasts and believe that this situation is worsening.

4.17.   Data collected by ICIS shows that the difference between a forecast published at 08:45 London time each day and actual outturn at its widest point on any given day averages almost 1.4GW over a two-week period in August 2016. Traders are suggesting that NGET is consistently over forecasting and this again is driving up day ahead prices. In one settlement period on Thursday 6 September, NGET's forecast was 2.1GW above actual outturn.[21]

4.18.   Given that accurate demand forecasting is also integral to an efficiently functioning system we considered whether it was appropriate to treat demand in the same way as wind and introduce a forecasting incentive.

Which demand?

4.19.   There are various types of 'demand'. Stakeholder responses to our initial consultation agree that the composition of the 'demand' for any incentive should be based upon the most appropriate data so that market participants can respond effectively to price signals. This should include intermittent and embedded generation. Possible short term demand forecasting options are:

- **Underlying demand:** demand used by the end consumer, regardless of how that electricity is generated

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20 Please see the BM reports for more detail http://www.bmreports.com/bwx_help.htm
21 Settlement period 29; Heren Article 06.09.2016

- **National demand:**[22] Underlying demand minus distributed generation minus demand side response

- **Transmission system demand:** National demand + station demand + exports

- **Capacity Assessment demand:** National demand + distributed wind

4.20.   We requested data from NGET on the demand forecasts it produces. We have received a dataset covering the period December 2012 to May 2015.[23] Its forecasts more closely resemble national demand.

Which Forecast?

4.21.   As important as which type of demand to incentivise is which forecasting timeframe(s) to focus upon; intraday, day ahead, day ahead peak or longer forecasts. Responses to the consultation suggest a range of timescales, the most supported being day ahead and week ahead. Which timeframe is the most liquid will also be an indicator as to where we should focus our attention. Day-ahead produces the most trading which suggests it should be included in any forecasting incentive.

4.22.   NGET produces a number of forecasts each day for a number of points, such as the overnight minimum or the evening peak (called Cardinal Points). The number of forecasts varies between not only the seasons but also the forecast horizon. Figure 4 below shows the average number of daily forecasts for each month for our current dataset.

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[22] As per the Grid Code definition
[23] NGET has also committed to send us the remaining period, which we would use when setting targets.

Figure 4: Average number of forecasts per month (period 2013-2015)
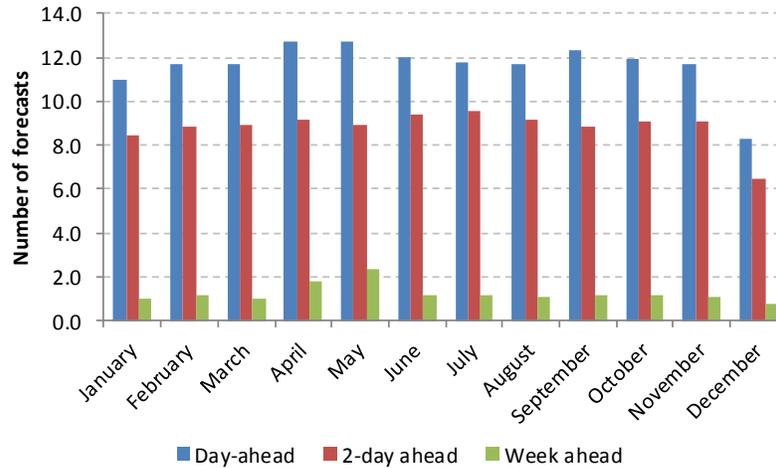
4.23. It is important to note that the forecasts NGET publishes which have a half-hourly resolution are interpolated for within day and day ahead forecasts by the BM systems, using profiles from manually selected historical days. This is the forecast published on the BM Reports website.

Initial Proposals

4.24. The responses to NGET incentive consultation as well as our further analysis suggest that the existing wind generation incentive and a new demand incentive should be put in place in the short term. We are proposing to set four identical incentive schemes for wind generation at day-ahead, and demand at day-ahead, two-days ahead and week-ahead, each with a cap and floor of ±£1million. We are also proposing to set an obligation for NGET to produce a quarterly report describing its forecasting performance, the root of the forecast error observed and the steps it is taking to improve its forecasts.

4.25. We are proposing that NGET is incentivised both for accuracy of forecasts but also on how evenly split the forecast errors are around outturns (ie no tendency of over-forecasting or under-forecasting). The following sections describe our incentive framework and the target for wind generation and demand forecasts. We welcome views on the detail of our proposals.

Incentive framework

4.26. The overall incentive framework aims to incentivise NGET to improve the accuracy of every forecast it makes while encouraging no propensity to either over or under forecast. This is achieved by:

- Having an **overall incentive framework** that encourages value across the year

- **Monthly scheme parameters** that encourage accuracy every day

- **Underlying equations** that appropriately reflect risk and reward for the scheme

4.27.   We are proposing that the **overall incentive** for each incentive has a cap and floor of ±£1million. We intend to split the potential value/loss into summer (April to September), winter (October to March) and unbiased forecasts according to Table 3 below:

Table 3: Proposed incentive value breakdown

Incentive area	Share of cap/floor	Incentive value
summer	1/4	£250,000
winter	1/2	£500,000
unbiased forecasts	1/4	£250,000

4.28.   The greater incentive value for winter recognises the importance that accurate forecasts have on a party's ability to balance their own position at periods of high electricity prices.

4.29.   We also propose that the incentive has a monthly cap. We believe this is relevant because it allows for NGET to be incentivised across the year, by removing the risk that one bad month removes any incentive to improve. The values above translate to approximately £42,000 of value/loss per month in summer and £83,000 for winter.

4.30.   We are proposing **monthly scheme parameters** that encourage accuracy each day and reflect the fact that an average of 0% forecast error is not achievable. For each day, NGET would calculate the average forecast error across all of its forecasts as a share of installed wind generation capacity[24] or demand. NGET's

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[24] We further discuss in the next section whether we should continue removing Bid-Offer Acceptance from NGET performance.

performance is then calculated as a share of the target (similar to the current wind generation forecast).

4.31. If NGET has a zero forecast error, it receives £2,500 for that day during summer and £5,000 during winter. This implies that NGET would reach the cap if it had a zero percentage error in 17 days for any given month. We believe it is appropriate to trial this approach for the interim scheme, given the difficulty of having a zero percent forecast error.

4.32. We are proposing that the **underlying equations** are similar to the current hybrid log-linear model used for the wind generation forecast. NGET would be incentivised in a linear manner up to 125% of the target. After that we propose to apply Equation 1 below:

Equation 1: Incentive performance when incentive non-linear

$$Performance = \max(-0.25 * incentive\ cap - 7{,}000 log_{10}\left(\frac{performance}{1.25 * target}\right), incentive\ floor)$$

4.33. We believe the hybrid log-linear model provides the appropriate balance from a central and steeper opportunity for outperformance with sufficient protection on the risk of high underperformance.

Incentivising unbiased forecast errors

4.34. For the unbiased forecasts, we are proposing to introduce a linear forecast incentive. That is because unlike forecast error levels, NGET has more control over its models propensity to over or under forecast. Also, it is significantly more likely that NGET will have an unbiased forecast for a month when compared with a 0% average forecast error.

4.35. Our analysis indicates that NGET has over-forecast 63% of the time on average between 2013 and 2015 on all these forecasts. However, as indicated above, recently, NGET is over-forecasting much more frequently, up to 72% of the time. We do not believe it would be appropriate to set a target of 72%, as we do not believe this is an acceptable baseline of SO performance. Instead we propose to set a more challenging framework as a discount to the historical average performance.

4.36. In our proposal, NGET would not receive any benefit or loss if it over or under forecasts 60% of the time. NGET, however, would get the full £42,000 if there is a symmetrical over or under forecast and would conversely lose £42,000 if it over or under forecast 70% or more of the time. We are also proposing that if any particular cardinal point forecast is consistently over or under forecasted in a month (more than 70%) then NGET will hit the floor for the month.

4.37. This framework creates an incentive for NGET to correct performance throughout the month by deliberately over or under forecast to compensate for poor performance either way in a month. We would deem that this behaviour is not

compliant with the C16 amendment of providing unbiased forecast and would monitor throughout the year to ensure compliance.

4.38. We will also keep under review the value of the incentives as well as the framework and may make significant amendments from 2018 if we do not believe that maintaining this approach is in the interest of consumers.

Wind generation forecast

4.39. In line with stakeholder responses to the initial consultation, our proposal is to continue with a day-ahead wind generation forecast incentive. Currently, the incentive scheme excludes Bid-Offer Acceptance (BOAs)[25] so as to not penalise NGET for actions it has had to take to manage constraints. However, this is potentially one reason that NGET is deemed to overestimate wind generation in the system as its forecasts do not take them into account. For this interim scheme we are not proposing to change this part of the incentive. However, we believe it is important for transparency on this area. As such, we will require NGET to explain the impact that BOAs have on its wind generation forecast accuracy as part of the quarterly report discussed below.

4.40. On targets, we are proposing to keep the target unchanged at 3% during the summer and 4.75% in winter. This is because NGET is yet to reach this level of performance and the target was set using the pre-2015 forecast error. Given NGET was rewarded for that performance, it would not be appropriate to reset the target.

4.41. Finally, we are proposing to amend the incentive to measure NGET's performance against half-hourly forecasts, given that changes in wind generation each half-hour can have a significant impact on market prices and parties' positions.

Demand Forecast

4.42.   Reflecting stakeholder responses, we are proposing to add three incentives at the day-ahead, two-days ahead, and week-ahead national demand forecasts. We have chosen this forecast because NGET already produces them for its own use (so no need to restart and because we can measure it against IO14 Elexon[26] settlement data, which is more accurate than operational metering). Moreover, given that this information is useful for assessing a party's settlement position, we believe it is the most useful forecast to incentivise.

4.43.   We are proposing to measure NGET's performance against the Cardinal Points forecasts it already produces and not the half-hourly forecast currently available in

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[25]A BOA is an instruction issued by NGET to a Balancing Mechanism power station to change its generation profile through the acceptance of a bid or offer.
[26] This is the detailed dataflow of the GB market used for settlement.

BM Reports.[27] That is because the Cardinal Points represent the true forecasts produced by NGET rather than the overlay of historical demand curves. We propose to keep this under review and consider a half-hour granularity if we keep these incentives for the enduring incentive scheme.

4.44.   Similarly to the unbiased forecast element, the discrete nature of cardinal point forecasts may create an incentive to alter the number of forecasts each day to maximise incentive value. We believe it inappropriate to restrict the number of Cardinal Points in the licence as this would restrict the flexibility of forecasting the key inflection points in demand. Moreover, we do not believe NGET would artificially decrease the number of forecasts it produces given the operational need for this information. Nevertheless, we will monitor NGET's actions and will deem an artificial reduction in the number of forecasts produced to be noncompliant with economic and efficient criteria and the requirement we are proposing to introduce on the publishing of unbiased forecasts for demand and wind generation.

4.45.   We are proposing to set the target using the lower quartile of historical forecast for summer and winter. We believe it is appropriate to set a challenging target that recognises the key role NGET plays in providing market information and the cost to suppliers and eventually consumers of imprecise demand forecasts. Table 4 below describes the targets for the three incentives:

Table 4: Summary of targets for demand forecasting incentive

Forecast	Summer	Winter
Day-ahead	1.37%	1.26%
Two-days ahead	1.61%	2.07%
Week-ahead	0.53%	0.46%

4.46.   We will continue to assess NGET's performance once we receive the remaining data, in particular we will investigate why the week ahead forecast data is significantly lower than other forecasts closer to real time.

Quarterly Forecast Report

4.47.   To improve transparency and deliver increasingly greater accuracy for both these forecasts for market participants, we propose the introduction of a quarterly forecasting report, the first being due in June 2017, to be published on NGET's website. The data collected through these reports will then inform future forecasting incentives for the longer term. This report would include as a minimum:

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[27] BM Reports is a website run by Elexon to provide operational data relating to the GB Electricity Balancing and Settlement arrangements to the market. Further information available at www.bmreports.com.

- Actual demand and forecast demand broken down into its component parts per settlement period. The forecast data shall cover day ahead, 2 - 14 days ahead, 7 days ahead and 2 – 52 weeks ahead stages.
- Metered wind output unwound for BM actions, actual metered wind and net BM actions on wind per settlement period. The data shall cover 4 hour ahead, day ahead, two days ahead, and week ahead stages. This should clearly explain the impact that BOAs have on wind generation seen in the system.
- The % error skew (over and under actual) for each timeframe for both demand and wind generation forecasting by month, with an explanation of why the results are as they are.
- A list of inaccuracies which are feeding into the data (both those which are controlled by NGET as well as those from data service providers).
- The mitigating actions being put in place to minimise these inaccuracies.

5. SO -TO mechanism

Chapter Summary

This chapter sets out our Initial Proposals for the SO-TO funding mechanism that we consulted on in August. This chapter has background to the SO-TO mechanism, a summary of consultation responses, a description of further analysis we have done, and our Initial Proposals for the SO-TO mechanism.

Question box

Question 1: Do you agree with our proposal to introduce a mechanism for the SO-TO to exchange funds? Please explain your answer.
Question 2: Do you agree with our proposal to introduce a pilot SO-TO incentive? Do you agree with the structure proposed? Is there anything missing or that should be removed? Please explain your answer.
Question 3: Do you agree with our proposal to introduce a requirement for a quarterly report? Is there anything missing or that should be removed? Please explain your answer.

Background

5.1.   The relationship between NGET and the TOs is becoming increasingly important with strong interdependencies between the two. There are a number of forums and initiatives that have been established to help NGET and the Scottish TOs to liaise and perform effectively.

5.2.   However, there is a gap in the current arrangements where the TO could incur increased expenditure to reduce overall system costs which are currently being missed. At present, there is no mechanism through which NGET can fund the TO for carrying out works which lead to overall system cost savings. For example, the TO could build a temporary tower so as to maintain a circuit operational when upgrading a section of the network, or add an additional shift of work to minimise the outage period.

5.3.   In August we consulted on our intention to develop an SO-TO mechanism to be trialled with the interim SO incentives scheme in April 2017. In that consultation, we sought views on a number of different design options.

Consultation responses

5.4.   There was broad agreement from respondents of the need to introduce an SO-TO mechanism. There was also broad support for the proposed implementation date of April 2017 to ensure potential savings are not missed. Some respondents argued that given its complexity, more time is needed to ensure the design of the mechanism is right. A number of respondents noted the tight timeframes that would

be involved in implementing the mechanism by April 2017, due to the associated code and licence modifications.

5.5.   The majority of respondents agreed with our proposal to introduce the mechanism through a combination of licence modifications to allow NGET to pay the TOs, and their relationship being defined in a new SO:TO Code[28] procedure. Respondents felt that this is the best way to support a robust process, and for reducing the potential for disputes between NGET and TOs.

5.6.   NGET expressed a desire for being able to establish a fixed price for works falling within the scope of the mechanism, to provide greater certainty of costs and to help its decision-making.

5.7.   The majority of respondents felt that the most appropriate cost-recovery methodology was to spread the costs of the mechanism across all settlement periods within the year. They believed that this would avoid the subjectivity of trying to determine the settlement period that savings were achieved in and provide greater certainty of costs in advance to BSUoS payers.

5.8.   All respondents agreed that £1.4million was an appropriate investment threshold to test the mechanism and would accommodate a reasonable volume of short-term mitigating actions. SSE supported having two thresholds, one for the overall annual investment threshold, and another threshold for individual projects.

5.9.   Most respondents were of the view that a separate incentive was not needed and that this mechanism could be included in the current BSIS framework. NGET however felt that creating a separate incentive mechanism would make the value delivered under the mechanism clearer and more transparent.

5.10. All respondents stated that it was appropriate to incentivise NGET under the mechanism to drive the desired behaviour and effectively achieve system cost savings.

5.11. All respondents stated that they would expect the mechanism and its processes to be fully open and transparent. NGET noted that the methodology for calculating the system savings should also be fully transparent.

Further analysis

5.12. Since our summer consultation, we met again with the TOs and NGET to discuss the mechanism. We discussed the potentially demanding timeframes within

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[28] The SO:TO code defines the relationship between the SO and the TOs in GB and is available at available at http://www2.nationalgrid.com/UK/Industry-information/Electricitycodes/System-Operator-Transmission-Owner-Code/

which we are planning to deliver the mechanism, and the key risks around not delivering the mechanism by the April 2017 deadline. We encouraged both the TOs and NGET to start drafting the required modifications in the event that the Authority introduces this mechanism to limit any lag between our decision and the mechanism being in place.

5.13.   Internally, we have also further refined our proposals and created criteria for large projects that may be submitted under the mechanism. Although we do not expect to use this feature in the trial, we believe it is appropriate to have a process that allows for projects above the current incentive threshold to be funded against a set of clear criteria or principles. Our key concern with this mechanism is the risk of double-funding for actions that form part of RIIO-T1. However, the key benefit if the process is correctly set is that the overall mechanism does not unduly restrict achieving consumer savings if those involve higher costs.

5.14.   Additionally, we considered the benefit of introducing an incentive framework for this new mechanism. The main advantage is that it would give greater emphasis on using the mechanism in an active and innovative way. There is a risk, however, that the mechanism is used for activities that we would deem to be business as usual and not innovative and as such not support our objectives.

Initial Proposals

5.15.   We are mindful that the timeframes are demanding for implementing the mechanism by April 2017. As such, we propose to introduce a simplified version of the mechanism as a pilot for the interim 2017/18 scheme.

5.16.   This proposal will establish the mechanisms framework, which could be used as the basis for a potential longer-term mechanism from April 2018 onwards. We believe that this interim scheme will inform how we consider the merit of introducing a more robust mechanism from 2018. At that time, we will also consider the case for extending or amending the mechanism to allow for SO-DNO transactions. Table 5 below summarises the key metrics of the proposed framework:

Table 5: Summary of SO-TO mechanism

SO-TO Mechanism: Key facts and figures	
Size of fund pot for pilot scheme	£1.4million
Length of mechanism	one year pilot
Cap and floor	±£1m
Sharing factor	10%
Anticipated size of projects under mechanism	£10k - £100k

Mechanism overview

5.17.   We are proposing to introduce a licence condition allowing NGET to spend up to £1.4million to fund changes to TO outages when doing so will reduce total system

costs. Any outage funded must be above and beyond what has been funded elsewhere and the other TO obligations in the SO:TO code and the Network Access Policy.[29] Initial analysis suggests that typical project costs falling within the scope of this mechanism will cost between £10,000 and £100,000. We therefore consider that £1.4million is an appropriate level of funding for the initial pilot year of the mechanism.[30] We propose to review the size of the funding pot if we decide to extend the mechanism in the incentive scheme from 2018 using evidence from the pilot.

5.18. This funding will be restricted to SO costs relating to outages on Scottish TOs' networks. This is because in England and Wales NGET and the TO are integrated and the trade-offs should already happen internally. Moreover, it would be difficult to monitor NGET's integrated performance given the lack of a transaction between independent parties.

5.19. We believe that NGET and the TOs are best placed to decide how they will work together to assess likely projects. Given that any changes to the SO:TO code will come to us for approval, we will have an opportunity to ensure that the mechanism works on behalf of consumers. However, there are key elements that would need to be addressed to make us confident that the mechanism is reaching its potential in the pilot:

- **Clarity on how NGET and TO agree costs for every outage** – our current understanding is that there is agreement that the TO should estimate the costs to be incurred and then invoice actual costs.

- **Clarity on who bears the risk for non-delivery of projects** – should NGET or TO bear the risk if the change is not delivered on time?

- **Clarity on who can propose changes** – whether only NGET or the TO can propose changes

5.20. For larger investments that exceed the £1.4million pot, we will need to assess and approve these costs on a case-by-case to ensure there is consumer benefit and that the project can be funded. We propose to add to NGET's licence a mechanism that allows it to apply for this additional funding.

5.21. We will also make it clear in the licence the minimum criteria any project would have to demonstrate and the benefits to consumers which must be proven to be eligible. We propose, as a minimum, that projects must:

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[29] The Network Access Policy under special condition 2J of its electricity transmission licence. It was set up under RIIO to support improved the communication and coordination between the SO and TOs building on the requirements of the SO:TO Code.
[30] In the event that the SO does not spend the £1.4million, it will be required to return it to consumers.

- **Show evidence of consumer benefit –** projects must be able to demonstrate clear evidence of consumer savings.

- **Not funded elsewhere –** in order to avoid double funding, projects will only be considered if they have not been funded as part of other schemes or mechanisms.

- **Independent review by independent third-party –** The projects must be supported by an independent third-party report which demonstrates that the methodology used to determine the savings by NGET is impartial, accurate and consistent and that the costs described are the minimum required to deliver the proposed project.

5.22. This part of the mechanism has a potential to be time-consuming and require significant resources. As such, in addition to a provision for a further information request for the Authority, we intend to insert a provision where we would send the project back to NGET for further evidencing and resubmission. Also, in the event that there is more than one project proposed, we will have the option of delaying consideration until a later year or not grant any funding if this is not possible.

Quarterly report

5.23. In order to ensure an open and transparent process, we propose that NGET publish a report every quarter from 1 April 2017 on all the projects brought forward, analysed, considered and funded under the mechanism in that period.[31] We believe this is important so that industry can hold NGET and the TOs to account as well as understand the value that it is getting from these additional charges. This will also help us to consider the benefit of maintaining the framework from 2018 onwards.

5.24. This report should also clearly set out the methodology used by NGET in determining the level of savings.

Incentive scheme

5.25. In order to ensure NGET has an incentive to only fund TO works which lead to overall system cost savings, we propose that the cost of these actions be subject to a financial incentive, and that NGET reports by 1 May 2018 on the actions it has considered (above a threshold of £25,000) and taken and the savings achieved or missed.

5.26. We propose that the financial incentive would have a cap and floor of ±£1million. By 1 May 2018, NGET would have to submit a report to the Authority describing the actions it has taken and considered (similar thresholds as the

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[31] For projects not executed, we propose that there is a minimum threshold of £25,000 to be considered in the report given the risk of this creating an incentive to not assess low cost projects.

quarterly reports) and the savings/losses it has incurred and its forecast incentive performance calculated as 10% of savings/losses subject to the cap and floor.

5.27. A draft report should have been consulted with industry for at least 28 days and its feedback on the methodology and actions should form part of the final submission to the Authority. NGET will also be required to submit to us all of the responses to its consultation.

5.28. This report should be reviewed by an independent third party. This review should provide an opinion on whether the methodology used to calculate savings is clear, whether a correction to the methodology is needed, validation of the data used and the savings/losses calculated in the report to ensure accuracy.

5.29. NGET should then submit the report, along with the consultation responses and the third party's report to the Authority. The Authority will then make a decision on the level of savings/ costs to be shared with or incurred by NGET. If the Authority deems the information is insufficient to demonstrate the saving/loss, it will have the option to remove that element from the overall calculation.

5.30. There is a risk that the approach outlined above is more subjective than a modelled target and can incentivise skewed methodologies. However, we believe that it is appropriate to retain the flexibility given under this new mechanism and that the transparency of the mechanism, industry consultation responses, and third party report will mitigate these risks.

6. Transparency, Model Development and Innovation

Chapter Summary

This chapter covers our proposals on increasing SO transparency and openness of procurement for stakeholders, our intention to retain the Model Development Licence Condition (MDLC) and to remove the System Operator Innovation Roll-Out Mechanism (SO-IRM).

Question box

Question 1: Do you agree that the proposed changes describe in Chapter 2 will enhance transparency? Please explain your answer.
Question 2: Do you agree with our proposal to not introduce a financial incentive on transparency? Please explain your answer.
Question 3: Do you agree with our proposal to retain the MDLC? If not, please explain your answer.
Question 4: Do you agree that we should amend the MDLC to require NGET to get third party scrutiny on areas where the model could be improved? Please explain your answer.
Question 5: Do you agree with our proposal to discontinue the System Operator Innovation Roll-Out Mechanism? Please explain your answer.

Transparency

Background

6.1.   NGET sits at the centre of the electricity wholesale market. It regularly engages with most market participants and has access to large amounts of centrally collated information. It takes real-time and forward-looking decisions based on this.

6.2.   It is important that stakeholders understand the decisions made by NGET on contracting and using services, as this informs their own investment and operation strategies. Transparent decision-making can in turn reduce system operation costs as clear signals are provided to the market, driving innovation, competition and efficiency. Greater transparency should also allow market participants to hold NGET accountable for its actions.

6.3.   In our initial consultation on SO incentives from 2017 we asked for views on whether the procurement of balancing services should be more transparent and open and if so how to achieve this. We also asked for views on whether NGET should pursue a more market-based approach to procuring services and also whether we

should introduce any incentives or requirements on NGET in this area from April 2017.

Summary of consultation responses

6.4.   Respondents broadly welcomed the idea that we should introduce a requirement on NGET to improve the transparency of balancing services and openness of procurement.

6.5.   On transparency, respondents highlighted a number of areas which could be improved. These range from areas where more data could be provided promptly and accessibly (eg price and volume for certain balancing services) to the disclosure of details around services NGET procure through 'out-of-the-market' mechanisms (eg bilateral contracts). Respondents also noted that there should be a requirement on NGET to address the complexity of balancing services to ensure they are more widely understood by all players in the market.

6.6.   On procurement openness, respondents highlighted many changes that could be implemented by NGET to improve this. These included a requirement to ensure that service specifications do not exclude certain providers, and that NGET uses a market-based approach, where appropriate, for procurement (auctions/tenders) to promote long-term competition and prevent distortions in the market.

6.7.   A number of respondents suggested that a financial incentive should be introduced to encourage NGET to improve transparency and openness although one respondent highlighted that such an incentive should be penalty only.

Further analysis

6.8.   We note that issues of transparency and openness for procurement are not new. They have been raised by us and stakeholders many times in the past, however NGET has not addressed these concerns in a way that we would have hoped.

6.9.   Our review found that although NGET continues to publish large amounts of information to industry, this information is not always easily accessible or helpful to market participants. This is supported both by stakeholder feedback as well as our commissioned report that highlighted issues on transparency in the balancing services market.[32]

6.10. We are also concerned that NGET still relies too much on bilateral contracts rather than market-based mechanisms for service procurement. We are concerned that while in certain circumstances this can be cheaper in the short term, in the

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[32] The Report from PA consulting can be found at https://www.ofgem.gov.uk/publications-and-updates/aggregators-barriers-and-external-impacts-report-pa-consulting

longer term costs may be higher due to a lack of a competitive market. This is because an open market should provide better signals to allow more market participants to compete to provide balancing services. To promote open and fair competition it is therefore important that where possible NGET procure balancing services through a market-based approach.

6.11. We have recently observed a renewed effort from NGET to more proactively attract new market participants to service provision and be more transparent in contracting balancing services. We welcome this increased engagement but believe that there is still more that NGET can do to be transparent and maximise competition.

Initial Proposals

6.12. We believe there is merit in introducing licence changes to put clearer obligations on NGET to improve on its transparency and openness of procurement from April 2017. We also believe it is important to start in 2017-18 so that the SO incentive scheme from 2018 can build on the baseline set this year.

6.13. As discussed in Chapter 2, we are proposing to clarify what our expectation of NGET behaviour is in its licence. A number of these clarification points are designed to address these issues, in particular clarifying that NGET must be economic and efficient by:

- publishing the system operation information electricity market participants need in order to make efficient operational and investment decisions

- producing and publishing reliable and unbiased forecasts of future margins, demand, wind generation and balancing costs

- ensuring the procurement of balancing and ancillary services is as transparent as possible

- ensuring that balancing and ancillary service product requirements do not inefficiently restrict new and existing providers from competing

- anticipating future system requirements and using and developing competitive approaches to procuring balancing services wherever this is in consumers' best interests

6.14. We expect these changes will help NGET respond more readily to stakeholder concerns and improve transparency and the openness of its procurement. As a result of this change we expect NGET as a start to improve its MBSS reports to better the reasons for its actions and the costs incurred and to actively review its C16 statements with stakeholders.

6.15. For many reasons, we are not proposing to introduce a financial incentive in this area despite a minority of respondents supporting it. Primarily, we believe that being transparent and having an effective procurement process are things that NGET should do as part of its baseline behaviour and should not be rewarded for this above the potential returns under RIIO-T1. We also believe that clarifying obligations would have a similar effect in that NGET would become more proactive without the need for additional funds from consumers. For these reasons we do not consider a financial incentive in this area appropriate.

Model Development Licence Condition

Background

6.16. The BSIS target is formed by two models: a constraints model and an energy model. The outputs from these two models are combined with a Black Start cost target to form one overall scheme target designed to reflect the costs NGET should economically and efficiently incur.

6.17. The constraints model sets the target for constraints management costs. It is a linear optimisation model that derives NGET's optimal strategy to manage constraints in the balancing mechanism. It incorporates the nodes, transmission lines and generators in the system. It uses a mixture of *ex ante* and *ex post* assumptions to derive a target that represents NGET's business as usual approach to constraints management.

6.18. The energy model is an econometric-based model that uses the historic relationship between the volume of services and costs of balancing the system to derive a target for NGET's energy balancing actions.

6.19. The Model Development Licence Condition (MDLC) sets a requirement on NGET to continue to develop these models so they are fit for purpose for future SO incentive schemes. In the consultation on SO incentives from 2017 we asked for views on whether the MDLC shouldn't be retained while we review our approach to financial incentives and the use of these models.

Summary of consultation responses

6.20. Respondents' views were split on whether we should remove the MDLC while we review our approach to longer term SO incentives.

6.21. Of those who supported removing the requirement, all believed that as we are currently reviewing our approach to financial incentives and the use of models as part of the longer term SO incentives, there shouldn't be a requirement on NGET to develop the models while this is going on.

6.22. Those who supported retaining the MDLC gave a number of reasons why the requirement should be maintained. One respondent highlighted that maintaining

models will allow for genuine efficiencies to be measured. A number of respondents stated that continued model development will support, rather than conflict, with the fundamental review of the longer-term SO incentive scheme.

Further analysis

6.23. Since our initial consultation, we have further considered the benefits of retaining the MDLC requirement on NGET.

6.24. The key benefit of having models that are continuously developed is that they can adapt to take account of changes in the system. This allows us to have updated models to assess performance when considering whether to continue with a model-based target approach. It also provides an additional counterfactual to evaluate whether the current incentive scheme models are working properly.

Initial Proposals

6.25. We believe there are considerable benefits in retaining the MDLC, as highlighted above, and we therefore propose to maintain this requirement on NGET. We propose to amend the licence condition to include a requirement for NGET to get third party scrutiny on areas where the model can be improved.

System Operator Innovation Roll-Out Mechanism

Background

6.26. The SO Innovation Roll-out Mechanism (SO-IRM) was introduced as part of the Electricity SO incentive scheme (2013-15) and was continued, with some improvement, in the following two-year scheme (2015-17). The SO-IRM allows NGET to apply to Ofgem for up to £10m in funding to implement up to three innovative techniques which provide benefits to consumers beyond the two-year incentive scheme. Ofgem then considers whether the application meets certain requirements as set out in NGET's licence.[33.]

6.27. In the 2013-15 scheme, NGET submitted two applications under the innovation mechanism. We decided that the cases presented for funding were insufficient and so rejected the projects as NGET did not adequately demonstrate a long-term benefit to consumers. In the 2015-17 scheme, no applications were submitted by NGET under the mechanism. In the consultation on SO incentives from 2017, we therefore asked respondents' opinions on whether they agreed with us that

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[33] Set out in Special Condition 4J of NGET's licence. The criteria for a project is that it: will deliver low carbon or environmental benefits; will provide long term value for money for the consumer; will not result in the licensee receiving commercial benefits; and will not be used to fund innovation that NGET would have ordinarily implemented.

the mechanism be discontinued and whether they had any suggestions on alternative ways to encourage NGET to innovate in the short term.

Summary of consultation responses

6.28. We received 14 responses with regards to the SO-IRM. Respondents broadly agreed that the mechanism should not be maintained. One highlighted that the mechanism is not necessary given that the Network Innovation Allowance (NIA) and Network Innovation Competition (NIC) mechanisms will continue to be available to NGET to allow it to implement innovative technologies. One respondent believed that if the BSIS scheme was effective in incentivising cost reduction, this should help to drive innovation and so the SO-IRM is not required.

6.29. NGET agreed that it is not sensible to retain the mechanism, given that the proposal is to introduce a one-year interim incentive scheme, as any application cannot be delivered in this time period. It proposed instead to increase the cap and collar which it believes would drive shorter term innovation by NGET. If the mechanism is removed, NGET was keen to understand stakeholders' views on whether the fund is to be used elsewhere by NGET to deliver consumer benefit (eg to encourage and enable new technologies/providers to enter the market).

6.30. Of those who supported retaining the mechanism, the main point put across is that the SO-IRM promotes innovation, with one respondent highlighting that this is particularly important in the current changing landscape. Respondents largely believed however, that if the mechanism is to be retained then it should be modified to allow NGET to invest in longer term initiatives (eg large-scale electricity storage).

Further analysis

6.31. Having considered stakeholders' views, we agree with those who highlighted alternative routes for NGET to assist in the funding of innovative projects (NIC and NIA) and so SO-IRM, in its current design, is not required.

6.32. We also note that during the current incentive scheme (2015-17) no applications were submitted by NGET and so we believe that the current mechanism needs further consideration to examine how it could be improved to encourage NGET to use this fund. We also agree with respondents that as the proposal is to introduce a one year interim scheme, this would not allow sufficient time to propose, approve, and fully implement projects under the scheme.

6.33. Removing this incentive would also make more resource available for our fundamental review of SO incentives. Ensuring NGET faces pressure to innovate and develop solutions which drive longer-term benefits for consumers will be an important consideration for this work.

Initial Proposals

6.34. Although we recognise that responses are mixed over whether to retain the mechanism, we are proposing to remove the SO-IRM provision from NGET's licence for the interim scheme.

Appendices

Index

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. In particular, we would like to hear from generators, suppliers, ancillary services providers and consumer organisations.

1.2. 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.

1.3. Responses should be received by 31 January 2017 and should be sent to:

- Leonardo Costa
- System Balancing
- 9 Millbank, Ofgem, London, SW1P 3GE
- 0203 263 2764
- soincentive@ofgem.gov.uk

1.4. 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.

1.5. 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.

1.6. Next steps: Having considered the responses to this consultation, Ofgem intends to decide on the incentive framework and publish our Final Proposals and licence modification consultation. Any questions on this document should, in the first instance, be directed to:

- Leonardo Costa
- System Balancing
- 9 Millbank, Ofgem, London, SW1P 3GE
- 0203 263 2764
- soincentive@ofgem.gov.uk

CHAPTER: Two

Question 1: Do you agree with our proposals to introduce new licence requirements / guidance around SO balancing behaviour? Please explain your answer.

Question 2: Do you agree with the clarifications we propose to introduce to NGET's licence? Is there anything missing or that should be removed? Please explain your answer.

Question 3: Do you agree with our Initial Proposal of maintaining a model-based target from April 2017 until March 2018? Please explain your answer.

Question 4: Do you agree with our proposed changes to the governance and incentive parameters? Is there anything missing or that should be removed? Please explain your answer.

CHAPTER: Three

Question 1: Do you agree with our proposal to remove Black Start from BSIS? Please explain your answer.

Question 2: Do you agree with the principles of our Black Start regulation? Should we add or remove any principle? Please explain your answer.

Question 3: Do you agree with our proposed regulatory framework for 2017/18? Please explain your answer.

CHAPTER: Four

Question 1: Do you agree with our amended wind generation forecast incentive proposal? Are there any elements you feel should be changed or that are more relevant to you? Please explain your answer.

Question 2: Do you agree with our proposal to introduce demand forecasting incentives in this interim scheme? Are there any elements you feel should be changed or that is more relevant to you? Please explain your answer.

Question 3: Do you have any additional criteria that you would propose for the Quarterly Forecast Report? Please explain your answer.

Question 4: Do you agree with how the parameters for the incentives are calculated? Should we consider anything else when setting the target?

Question 5: Do you believe we should introduce an additional mechanism to counter the incentive to under or over-forecast in any given month to maximise incentive value? Please explain your answer.

CHAPTER: Five

Question 1: Do you agree with our proposal to introduce a mechanism for the SO-TO to exchange funds? Please explain your answer.

Question 2: Do you agree with our proposal to introduce a pilot SO-TO incentive? Do you agree with the structure proposed? Is there anything missing or that should be removed? Please explain your answer.

Question 3: Do you agree with our proposal to introduce a requirement for a quarterly report? Is there anything missing or that should be removed? Please explain your answer.

CHAPTER: Six

Question 1: Do you agree that the proposed changes describe in Chapter 2 will enhance transparency? Please explain your answer.

Question 2: Do you agree with our proposal to not introduce a financial incentive on transparency? Please explain your answer.

Question 3: Do you agree with our proposal to retain the MDLC? If not, please explain your answer.

Question 4: Do you agree that we should amend the MDLC to require NGET to get third party scrutiny on areas where the model could be improved? Please explain your answer.

Question 5: Do you agree with our proposal to discontinue the System Operator Innovation Roll-Out Mechanism? Please explain your answer.

Appendix 2 – Reasons for not doing an Impact Assessment

Chapter Summary

This chapter sets out our reasons for not conducting an Impact Assessment (IA) on the Initial Proposals for SO incentives for the interim scheme.

1.1. Under Section 5A of the Utilities Act, we have a legal duty to carry out an IA, where we are proposing to do anything in relation to our functions and it appears that the proposal is important. We also publish IA guidance[34] setting out our view of best practice on deciding when to conduct an IA and our approach to it. We have considered the need to, and practicality of, carrying out an IA in light of this guidance.

1.2. We are first required to consider whether the Authority's decision on the proposal is important. We assess four criteria to help determine importance. Each is assessed in turn below:

- **Whether the event constitutes a major change in the activities carried out by the Authority** – while a decision on the overall regulation of the SO is important, given that we are proposing to maintain the majority of the existing framework and only make changes to elements of it, we do not consider this to be the case.

- **Whether there is a significant impact on persons engaged in the shipping, transportation or supply of gas, the generation, transmission, distribution, or supply of electricity, or in connected commercial activities** – while our incentive schemes have an impact on NGET's procurement and utilisation decisions, impacting not only NGET but also market participants financially, we would normally deem significant incentive scheme changes as important. However, given this is a one-year scheme and we are not fundamentally changing the framework, we believe the impact on all parties to be more marginal.

- **Whether there is a significant impact on consumers and/or the general public in Great Britain or part of Great Britain** – we think that it is borderline whether the criteria is met. The incentive scheme can

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[34] Available on https://www.ofgem.gov.uk/publications-and-updates/impact-assessment-guidance

affect consumer bills as well as how optimal the services procured by NGET are. However, given this is a one year scheme and the framework is broadly unchanged, we believe there is less scope for significant changes in approaches leading to a significant impact under this area. While our changes to regulation for Black Start are more significant, we believe that a similar reasoning applies. However, we would consider any enduring arrangement on Black Start from 2018 to be important.

- **Whether there are significant effects on the environment** – We also considered the impact on the sustainability of the energy system and on the environment. Our decision on BSIS is independent of the generation mix that NGET will have access for balancing in 2017/18. As such, our incentives decision will not have an impact on the sustainability of the energy system.

1.3. Overall, we believe that it is borderline whether we are required to perform an IA under Section 5A of the Utilities Act. However, for the fundamental review when we will consider the overall regulation of the SO, we will deem it may be an important decision.

1.4. In any event we can decide not to carry out an IA if it appears to the Authority that the urgency of the matter makes it impracticable. We believe it is impractical to perform an IA for this interim scheme. Given that the current SO incentive scheme expires on 31 March 2017, there is a limited time between now and the expiry of the incentive scheme to consult stakeholders and introduce a new scheme. So, if we wanted to do an IA, we would need to delay the start of the incentive scheme in order to have enough time to do so.

1.5. On balance, we believe it is in the interest of consumer to have our policy approach clarified by 1 April 2017. This is because the incentive scheme is for one-year only and there are few significant options we can implement in this timetable. Moreover, a significant delay in introducing incentives can cost consumers due to the uncertainty on incentives leading to higher balancing costs.

Appendix 3 - Glossary

A

Ancillary Services

Mandatory, necessary or commercial services used by the electricity System Operator to manage the system and to meet their licence obligations.

The Authority/Ofgem/GEMA

Ofgem is the Office of Gas and Electricity Markets, which supports the Gas and Electricity Markets Authority (GEMA), the body established by Section 1 of the Utilities Act 2000 to regulate the gas and electricity markets in Great Britain.

B

Balancing Mechanism (BM)

The mechanism by which the electricity System Operator procures commercial services (Balancing Services) from generators and suppliers post gate closure, in accordance with the relevant provisions of the Balancing and Settlement Code (BSC) and the Grid Code.

Balancing Services

The services that the electricity System Operator needs to procure in order to balance the transmission system. Balancing services include ancillary services.

Balancing Services Incentive Scheme (BSIS)

A scheme that has been applied to NGET to incentivise efficient balancing of the transmission network.

Balancing Services Use of System charges (BSUoS)

The half-hourly charge levied by the electricity System Operator on users of the transmission system in order to recover the costs of operating the transmission system and procuring and utilising Balancing Services.

Bid-Offer Acceptance (BOA)

A BOA is an instruction issued by NGET to a Balancing Mechanism power station to change its generation profile through the acceptance of a bid or offer.

Black Start

If the electricity system experiences a full or partial shutdown, isolated power stations that have Black Start capability (an auxiliary generating plant located on-site) are started individually and gradually connected to each other to form an interconnected system again.

C

Cap

The maximum incentive payment NGET is permitted to receive as part of an incentive scheme (this may also be subject to a 'sharing factor').

Consumer

In considering consumers in the regulatory framework we consider users of network services (for example, generators, shippers) as well as domestic and business end consumers, and their representatives.

Constraints (also known as congestion)

A constraint occurs when the capacity of transmission assets is exceeded so that not all of the required generation can be transmitted to other parts of the network, or an area of demand cannot be supplied with all of the required generation.

E

Ex-ante / Ex-post Inputs

Ex-ante inputs to National Grid's models are those whose values are set prior to the start of the scheme and are not updated as the scheme progresses (except under specific agreed circumstances). Ex-post inputs are collected on a monthly basis using outturn data. Ex-ante and ex-post data are combined with the agreed models to determine the level of costs against which National Grid should be incentivised.

Electricity Margin Notice

Formal Grid code communication that informs the market that NGET's reserve is not as big as it would like it to be at a particular time of that day. It was previously known as a NISM (Notice of Inadequate System Margins.

Energy Imbalance

Energy imbalance costs are those incurred by National Grid to correct for differences between the generation supplied by the market and the demand on the system (see also Market Length).

F

Floor

The maximum loss NGET can make as part of an incentive scheme (this may also be subject to a 'sharing factor').

Frequency Response

The electricity SO has a statutory obligation to maintain system frequency between +/− 1% of 50 hertz. The immediate second-by-second balancing to meet this

requirement is provided by continuously modulating output through the procurement and utilization of mandatory and commercial frequency response.

I

Income adjusting event (IAE)

An unforeseen event has resulted in unexpected costs or savings of greater than a set limit, known as the materiality threshold.

Interconnector

Equipment used to link electricity or gas systems, in particular between two Member States.

L

Licence conditions (obligations)

Obligations placed on the network companies to meet certain standards of performance. The Authority (GEMA) has the power to take appropriate enforcement action in the case of a failure to meet these obligations.

N

National Grid Electricity Transmission (NGET)

NGET is the Transmission System Operator for Great Britain. As part of this role it is responsible for procuring balancing services to balance demand and supply and to ensure the security and quality of electricity supply across the Great Britain Transmission System.

O

Outputs

What the SO is expected to deliver.

P

Plexos

A modelling tool for power market analysis.

Price control

The control developed by the regulator to set targets and allowed revenues for network companies. The characteristics and mechanisms of this price control are developed by the regulator in the price control review period depending on network company performance over the last control period and predicted expenditure in the next.

R

RIIO–T1

RIIO–T1 is the first transmission price control review under the new regulatory framework known as RIIO (Revenue = Incentives + Innovation + Outputs). The RIIO model builds on the previous RPI-X regime, but is designed to better meet the investment and innovation challenge by placing much more emphasis on incentives to drive the innovation needed to deliver a sustainable energy network at value for money to existing and future consumers.

S

Sharing factors

For cost incentives, these describe the percentage of profit or loss which NGET will have to bear if the relevant incentive performance measure falls below or exceeds the relevant incentive target. For output incentives, these describe the percentage of profit or loss which NGET will have to bear if the relevant incentive performance measure exceeds or falls below the relevant incentive target.

Short Term Operating Reserve (STOR)

A service that provides additional active power from generation and/or demand reduction.

SO External costs

The costs National Grid incurs in relation to the operation of the gas and electricity system. These costs include contracts for balancing activities in electricity, purchasing energy to transport gas and entering into trades on the commodity market (gas) and the Balancing Mechanism (electricity).

SO Internal costs

Internal costs relate to NGET's own costs associated with its SO activities, such as building, staff and IT costs.

Stakeholder

Stakeholders are those parties that are affected by, or represent those affected by, decisions made by network companies and Ofgem. As well as consumers and companies involved in the energy sector, this would for example include Government and environmental groups.

System Operator (SO)

The entity charged with operating either the GB electricity or gas transmission system. NGET is NGET of the high voltage electricity transmission system for GB.

SO:TO code

The SO:TO code defines the relationship between the SO and the TOs in GB.

T

Transmission Losses

Electricity lost on the GB transmission system through the physical process of transporting electricity across the network. The treatment of transmission losses is set out in the BSC.

Transmission Owner (TO)

There are three separate high voltage electricity Transmission Owners in GB. National Grid Electricity Transmission (NGET) owns and maintains the high voltage electricity transmission system in England and Wales. Scottish Hydro–Electric Transmission Limited (SHETL) is the electricity transmission licensee in Northern Scotland and Scottish Power Transmission Limited (SPT) is the electricity transmission licensee in Southern Scotland.

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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