

# Electricity System Operator Incentives: Incentives from 2015

## Consultation

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### Overview:

This document sets out our proposals on the development of future incentive schemes for the electricity system operator. We propose a two year incentive scheme to be put in place from 1 April 2015 to 31 March 2017. Under our proposals the incentives placed on the Electricity System Operator would be based on the existing framework.

The current incentive scheme provides a robust framework which protects the interests of consumers. It achieves this through the use of financial incentives which promote economic, efficient and coordinated action by the system operator.

Under the 2015-17 scheme we aim to secure targeted improvements to the existing framework. We want to use our learning from application of the current scheme to make improvements to some of the newer incentive arrangements which we put in place. We will also consider whether there is a need for increased transparency of actions taken by the SO and the modelling used to set a scheme target.

## Context

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National Grid Electricity Transmission plc (NGET) is the electricity system operator (SO) for Great Britain (GB). As SO, NGET plays an important role in the functioning of the GB electricity market. 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.

Ofgem regulates the actions of the SO to ensure that it is encouraged to minimise the costs of balancing the system for market participants. Building on statutory obligations which require the SO to act in an economic, efficient and coordinated manner, we have historically achieved this through setting financial and reputational incentives. In this document we consult on our proposal to introduce a two year scheme based on the core framework of the current incentive which is due to expire on 31 March 2015. This will allow us to embark on a wider review of the incentive framework over the next two years. This timeframe will enable us to consider how a more enduring framework could incorporate any potential changes to the system operator's role and prevailing market arrangements.

## Associated documents

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Electricity System Operator Incentives: Final proposals on a scheme for 2013. 31 May 2013: <https://www.ofgem.gov.uk/publications-and-updates/electricity-system-operator-incentives-final-proposals-scheme-2013>

Electricity System Operator Incentives: Decision to Modify the Licences. 5 July 2013: <https://www.ofgem.gov.uk/publications-and-updates/electricity-system-operator-incentives-decision-modify-licences>

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## Executive Summary

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National Grid Electricity Transmission (NGET) is the electricity transmission system operator (SO) for Great Britain (GB). As SO, NGET is responsible for balancing the electricity system on a continuous basis. The costs 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, the annual cost to consumers has been about £850 million per annum.

We place incentives on NGET to operate the system as cost-efficiently as possible<sup>1</sup>. The current incentive scheme is in place from 1 April 2013 to 31 March 2015. In this document we set out our proposals to develop a scheme for 1 April 2015 to 31 March 2017 based on the current incentive framework.

We intend to undertake a fuller review of the incentive scheme and develop enduring arrangements to apply from 1 April 2017. This will enable us to consider the impact of a number of market changes that are taking place over the coming years which may impact on the role of the SO.

### *A two year scheme based on the current framework*

We consider that the current incentive framework has delivered real efficiency improvements and savings for consumers in recent years despite the growing challenges that the SO faces in its operation of the system. Our ongoing monitoring of the SO's balancing actions and costs alongside our application of the incentives provide us with evidence of where the incentives are driving the SO to make economic and efficient decisions in its operation of the system. For example, within the 2013-14 scheme year, NGET has saved money by improving its contracting strategies for a number of service areas, including operational reserve and voltage constraint management.

There are a number of changes to the market arrangements that will take place over the coming years. These changes could impact the role of the SO. We think that it is appropriate to develop a greater understanding of the impact of these changes on the SO before we consider more fundamental changes to the SO incentive scheme. We therefore propose to introduce a new two year system operator incentive scheme in April 2015, based on the current framework. We intend to make incremental changes to this incentives framework where a benefit to consumers is identified. In

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<sup>1</sup> These incentives relate to the external costs of the SO (ie the SO's utilisation of the balancing mechanism and its procurement of services to balance the system and manage system constraints). The SO's internal costs (such as its staff and I.T. costs) are included within the RII0-T1 price control which is in place until 31 March 2021. We propose for this arrangement to continue as part of the extension.

particular we are considering whether it is appropriate to make improvements in the following areas:

- **Target setting approach:** The target plays a key role under the incentive scheme. We will consider whether the methodology for setting the target remains robust. We will also work with NGET to improve industry understanding of the inputs and models that are used to set a scheme target and consider the governance arrangements which are in place surrounding the models.
- **Design of additional incentives:** We introduced four incentives additional to the core balancing services incentive scheme within the 2013-15 incentive framework. We will assess NGET's performance under these incentives and consider whether any changes are appropriate.
- **SO-TO financial mechanisms:** We will look at the need for, and design of, potential mechanisms for financial transfers between the SO and TOs to ensure consideration of whole system impacts of system outages.
- **Transparency:** Some stakeholders have suggested that they would benefit from greater transparency and understanding surrounding the SO's actions. We will consider where transparency improvements could be made and how the regulatory framework could encourage this.

#### *Our review of incentives*

As we set out in our final proposals document for a 2013-15 scheme, we continue to consider that a fundamental review of the incentives will be needed. This review will reflect changes to the market such as the growth of intermittent generation and increased connections with continental Europe which will impact on the SO's role. The role of the SO will also be changing as a result of policy decisions within the European Network Codes and the Government's Electricity Market Reform (EMR). Ofgem's own Integrated Transmission Planning and Regulation project and engagement through the Future Trading Arrangements forum are also raising the potential for SO role changes.

As part of our incentive review we intend to work closely with NGET to identify regulatory approaches that can work within the context of the changing market and policy landscape. We will work with industry to identify where incentivisation of certain behaviours from the SO can deliver benefits for industry and consumers. We expect this to include encouraging NGET to take a more proactive and longer term approach to efficient system operation. We are aiming to introduce future incentive arrangements from April 2017.

#### *Next steps*

Following responses to this consultation we intend to publish our initial proposals and then final proposals on the extension of the current framework later this year. Licence conditions applying this framework would take effect from 1 April 2015.

# 1. Background

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## Chapter Summary

In this chapter we summarise the incentive scheme that is currently in place for the electricity system operator. We consider how NGET has been performing under the incentive schemes in recent years.

## Question box

1. Do you have any views on how the current incentive scheme is functioning?
2. What are your views on our proposal to introduce a two year incentive scheme consistent with the current framework?

## The 2013-15 incentive scheme

### *The balancing services incentive scheme*

1.1. The current electricity system operator incentive framework covers the period from 1 April 2013 to 31 March 2015. The incentive framework is made up of a number of incentives, the largest of which is the balancing services incentive scheme (BSIS). We use the BSIS to incentivise NGET to minimise the costs of its balancing services. We achieve this by setting a target for the costs which NGET incurs. NGET retains 25 per cent<sup>2</sup> of any underspends while it is also liable for 25 per cent of any overspends against this target. NGET retains this share of over or underspends subject to a maximum profit or loss of  $\pm\text{£}25$  million per annum<sup>3</sup>.

1.2. While the scheme is in place for two years, an assessment of NGET's performance against the scheme target is applied on an annual basis. NGET's balancing costs in the period from 1 April 2013 to 31 March 2014 were evaluated against the first year scheme target. The scheme parameters have now been refreshed for the 2014-15 scheme year and NGET's performance against the second year target will be considered separately to the first.

1.3. We also have the ability to update elements of the scheme design at the mid-scheme stage. This is designed to manage uncertainties over a two year period and to retain an opportunity for ensuring that the framework remains appropriate. Under this mechanism NGET had the opportunity to propose the following changes for the second year of the scheme (to take effect from 1 April 2014):

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<sup>2</sup> We refer to this as the sharing factor.

<sup>3</sup> The annual scheme cap and floor.

- amendments to the model methodologies which govern how the scheme target is generated;
- updates to certain ex ante inputs for the second year of the scheme; and
- applications to the Authority for income adjusting events where it believes that any events have occurred in line with the licence definition.

1.4. In practice, NGET updated the boundary limits to reflect its year ahead outage plan. It also proposed changes to the black start target for the second year of the scheme which we approved<sup>4</sup>. It did not raise any proposals for changes to the scheme methodology and has not yet raised any income adjusting event notices (the deadline for this is 30 June 2014).

1.5. The two year framework is designed to provide the SO with certainty over how costs will be incentivised over this period, allowing it to make economic decisions over the two years. At the same time, separate evaluation of NGET's performance in each year, and the potential for updates at the mid-scheme stage allows for uncertainty and volatility ensuring that the scheme design can remain fit for purpose and that the incentives remain in place regardless of how the SO has performed in the first year of the scheme.

### *Additional incentives*

1.6. In addition to the BSIS, we included a number of other incentives within the current scheme framework. These are as follows:

- **Wind generation forecasting incentive:** NGET is incentivised to provide accurate day ahead forecast levels of wind generation. It is financially rewarded for beating a performance level target and is penalised if its forecasting accuracy does not meet this target. The maximum potential for profit or loss is theoretically £250,000 in each calendar month<sup>5</sup>.
- **SO Innovation Roll-out Mechanism:** NGET can apply for funding for the roll-out of proven innovation<sup>6</sup> which can deliver enduring benefits for consumers. Under our SO Innovation Roll-out Mechanism the SO could apply for up to £10 million of funding to cover up to three roll-out projects from 1 April 2014.
- **Transmission losses reporting:** We introduced a licence requirement for NGET to report more extensively on the amount of electricity lost on

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<sup>4</sup> We published our approval of these changes here: <https://www.ofgem.gov.uk/ofgem-publications/86824/blackstartopenlettertopublish.pdf>

<sup>5</sup> In practice NGET can only profit by £250,000 if there is no error in its forecast for every day of the month.

<sup>6</sup> We define this as innovation with a technology readiness level of 9. Technology readiness levels are an internationally recognised measure of innovation readiness. Level 9 is the latest stage before commercial application and represents the roll-out phases of innovation.

the transmission system<sup>7</sup>. Under this condition it publishes information relating to the volume and cost of transmission losses as part of its monthly balancing services statements. It also presents forward looking considerations of transmission losses within its electricity ten year statement.

- Model Development Licence Condition:** Two computer models are used by NGET<sup>8</sup> to calculate a target for its costs under the BSIS. In order to ensure that the models remain fit for purpose, are able to support the development of a future incentive design, and deliver wider benefits for the industry, we introduced a licence requirement on NGET to continue to review and develop the models. NGET is also required to develop the models for longer term forecasting of balancing costs with a minimum outlook of eight years. We expected NGET to work closely with stakeholders to review and develop these models.

1.7. The table below summarises the incentive scheme framework. More detail on the structure of the scheme can be found in our final proposals document and in NGET’s special licence conditions.

**Table 1: Summary of scheme framework**

Characteristic	Description	Application in 2013-15 scheme
<b>BSIS Scheme parameters</b>		
Scheme structure	Length and break-down of scheme	Two year scheme with one year update of target and other key parameters
Target setting approach	Methodology used to define the target against which NGET’s costs are compared	Use of two models to identify a target for energy balancing and system balancing costs. These are combined to form one overall scheme target
Sharing factor	Percentage of under/overspend that the SO retains within the cap and floor bounds	25 per cent
Cap and floor	Maximum return/loss that the SO can derive from the scheme	±£25 million in each year of scheme
Income adjusting events (IAEs)	Provisions to apply for changes to the target to account for events beyond NGET’s control and ability to forecast which lead to costs exceeding a materiality threshold	Materiality threshold of £10 million per event at the end of each scheme year

<sup>7</sup> During the transmission of electricity, some energy is 'lost' from the transmission system, usually in the form of heat. This lost energy is known as transmission losses.

<sup>8</sup> These models are owned by NGET and are approved and validated by Ofgem. We subject the models to ongoing review to ensure accuracy of the target.

Characteristic	Description	Application in 2013-15 scheme
<b>Additional Incentives</b>		
Wind generation forecasting incentive	Incentive on the accuracy of the SO's day ahead wind generation forecasting	A maximum of ±£250k each month based on NGET's day ahead forecast accuracy
SO Innovation Roll-out Mechanism	Funding for roll-out of proven innovation (Technology Readiness Level 9) where benefits go beyond the scheme period	Up to £10 million available for roll-out of up to three projects in second year of scheme, funded through BSUoS charges
Transmission losses incentive	Requirement to report on transmission losses	Requirement for NGET to report on system transmission losses, identified trends and how they are taken into account by the SO
Model development licence condition	Requirement for the SO to develop the models which are currently used to set a target under a scheme	Licence condition to continue developing models. Focus on working with stakeholders and enabling enduring models to meet a number of objectives

## NGET's performance under the current incentive scheme

1.8. We monitor NGET's performance against its incentive schemes on an ongoing basis. We use this monitoring activity to question and challenge NGET on the actions which it has taken to balance the system. This has allowed us to understand the main drivers of balancing costs and the efforts being taken by NGET to carry out its duties. A number of external factors outside of the SO's control impact on its system operation costs. Factors such as increasing penetration of intermittent generation and intensive network investment plans are placing upward pressure on system operation costs. However, our monitoring suggests that NGET's efforts, driven by our incentives, have contributed to the SO being able to carry out efficient system balancing in the face of increasing challenges.

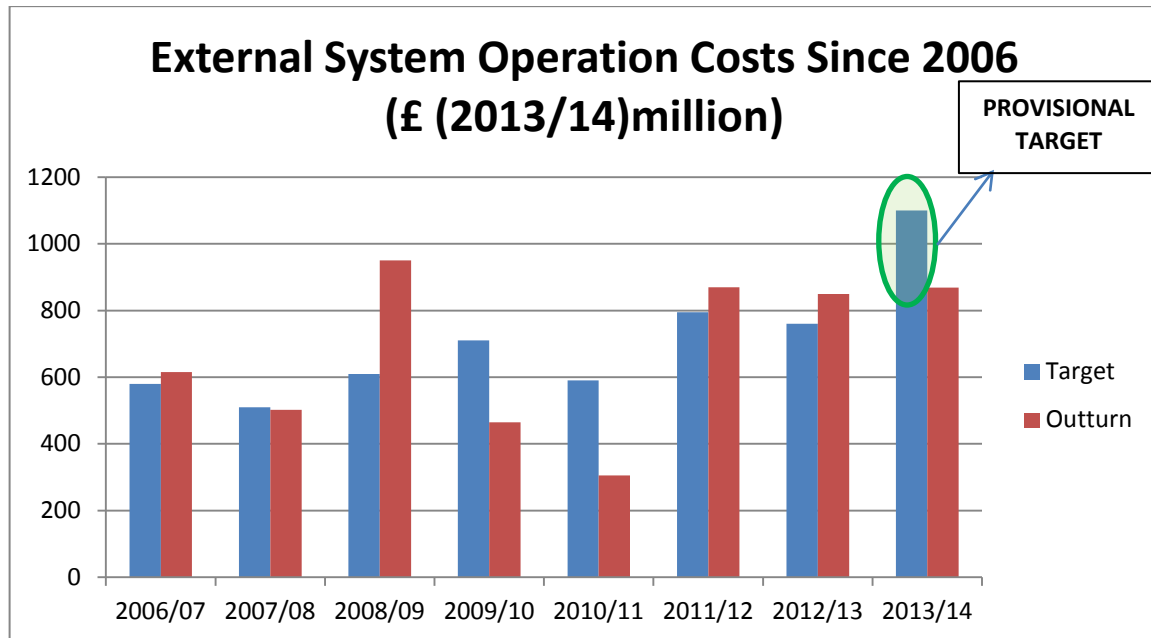
1.9. In the 2013-14 scheme year, NGET incurred £869.4 million of external cost to carry out its energy and system balancing responsibilities. This compares to costs of £820.6 million in the 2011-12 scheme year and £822.0 million in the 2012-13 scheme year<sup>9</sup>.

1.10. The figure below demonstrates the annual costs since 2006 in £2013/2014 million<sup>10</sup>:

<sup>9</sup> Note that the outturn costs for the 2011-12 and 2012-13 scheme years do not include the costs associated with the financial transmission losses incentive. This allows a like-for-like comparison with the current scheme.

<sup>10</sup> The target for the 2013-14 scheme year is still provisional and subject to ongoing discussions with NGET.





**Figure 1: External System Operation Costs since 2006**

1.11. This figure shows the the costs of balancing the system since 2006. There has been considerable cost volatility throughout the period with costs generally increasing in recent years. This results from a number of developments to the electricity system. The growing penetration of intermittent generation has increased the short term complexity of operating the system. In addition, there is a significant amount of work being carried out to upgrade the transmission system. This is intended to increase future transmission capacity and reduce constraint costs in the long term. Whilst the upgrade is taking place there are impacts on the level of transmission capacity available which can increase constraints on the network resulting in more actions needing to be taken.

1.12. Our monitoring suggests that in 2013-14 the incentive scheme in place has driven NGET to seek opportunities for efficiency savings in the context of increasing system operation challenges. NGET has presented us with information to demonstrate areas where it has developed new approaches towards its balancing actions to increase its effectiveness and efficiency. For example, NGET has assessed its contracting strategy and identified new service providers for operating reserve and frequency response resulting in lower costs for consumers. NGET has also demonstrated constraint management contracting strategies, in particular relating to voltage management, which have realised efficiency benefits.

1.13. We consider NGET’s expected outperformance against the target to represent a reduction in the costs which consumers ultimately face when compared with the costs that NGET would have incurred in the absence of incentives.

## Proposals for a 2015-17 incentive framework

1.14. We propose to introduce a two year scheme from April 2015 consistent with the core framework of the 2013-15 scheme. We believe that we have an incentive structure which is working well to incentivise the SO to act efficiently and economically. Committing to a two year framework with a consistent structure at this time will provide the SO with certainty as to how its performance will be incentivised going forward. This will allow it to optimise its activities and build in some mid term planning and optimisation.

1.15. While we propose a scheme consistent with the core of the current incentive framework, there are some key aspects of the incentives that we will take the opportunity to enhance. We set out more detail on the scope of the areas that we propose to consider as well as our intended process going forward in the next chapter.

## Development of a future incentives framework from 2017

1.16. At the time of setting the current scheme framework, we said in our final proposals document that:

*'The two year scheme length will provide an opportunity to review our approach towards incentives as greater certainty develops regarding the changes to the market expected in the coming years. We will consider the level of clarity with regard to these developments in deciding on the most appropriate timing for introduction of an enduring approach.'*

1.17. Ongoing market changes such as increasing renewable penetration, integration with Europe and developments to the internal transmission network are already impacting on the SO's role in balancing the system. Ofgem projects such as the integrated transmission planning and regulation (ITPR) and future trading arrangements (FTA) could have potentially significant impacts on the role of the SO. Other areas of policy such as the Government's electricity market reform (EMR) could also impact both upon the SO's role and on the market in which it operates. We will need to ensure that future SO incentives remain fit for purpose in this changing environment.

1.18. We continue to believe that a review of incentives in the face of these changes to the market and the role of the SO is necessary. However, the continuing level of uncertainty regarding developments to the SO's role leads us to consider that it would not be prudent to introduce potentially fundamental reform to the incentives on the SO in time for the expiry of the current scheme in 2015. Alongside our proposals for a two year scheme from 2015-17 we therefore propose to commence work to consider how future incentives would reflect the developing role of the SO and ensure that it is delivering outputs to the benefit of industry and ultimately consumers.

## **Your views**

1.19. We are interested in your observations on the design of the incentive framework and the SO's performance under it in recent years. We also seek views on our proposals for a two year scheme from April 2015 consistent with the core framework of the current scheme.

## 2. Scope of changes to a 2015-17 scheme

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### **Chapter summary**

In this chapter we set out our intended scope for considering any changes to the incentive framework as part of the 2015-17 scheme. We also summarise our timing for development of proposals for licence modifications to introduce the new two year scheme.

### **Question box:**

1. Do you agree with the proposed scope of changes to the 2015-17 scheme?
2. Do you consider NGET's modelling to be sufficiently transparent? How could this transparency be improved?
3. How do you think the additional incentives that sit alongside the BSIS could be improved?
  - a. Do you have any views on areas of functionality of the models that should be improved or introduced? How would you like to be engaged in the model development process?
  - b. What value do you place on NGET's wind generation forecasting? To what extent do you use this and how? Do you see benefit in extending the incentive to other areas of forecasting?
  - c. Do you believe that the SO Innovation Roll-out Mechanism should be retained? To what extent do you consider that it encourages the SO to take an innovative approach? How could the processes for application and approval be improved?
  - d. To what extent do you find the information that NGET publishes on transmission losses in its monthly balancing services statement and ten year statement useful? Would you like more or less to be published?
4. Is there a need for additional SO-TO financial mechanisms to facilitate whole system consideration of outage planning (i.e. taking account of the impact on constraint costs)?
5. Is there sufficient transparency of the SO's actions? If not, where are improvements needed?

### **Proposed scope for changes to 2015-17 scheme**

2.1. We propose that the structure of the 2015-17 framework remains consistent with the current scheme<sup>11</sup>. We would retain the balancing services incentive scheme (BSIS) which incentivises the SO's system operation costs. The current framework is well understood by us and NGET as well as wider stakeholders and has benefited from evolution over a number of years. Maintaining consistency with the current framework will ensure that our resource, and that of stakeholders, can be focussed

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<sup>11</sup> Set out in Special Condition 4A to 4J of NGET's Special Licence Conditions

on considerations of how an incentive framework may need to change looking ahead to 2017.

2.2. We also propose extending the annual review process under which NGET can propose changes to a number of selected areas of the scheme as outlined in the previous chapter. NGET would have the opportunity to propose amendments to the target setting methodology, make updates to identified target setting inputs, apply for funding under the SO-IRM and submit applications where it considers income adjusting events to have occurred. An annual review would take place at the end of the 2014-15 scheme year, and again at the end of the 2015-16 scheme year. Any changes resulting from these annual reviews would take effect from 1 April 2015 and 1 April 2016 respectively.

2.3. Beyond the potential for changes and applications which are already built into the scheme framework within the annual review process we intend to keep the scope for further changes to the licences limited and targeted. We intend to maintain the same parameters as are included in the current scheme (eg the sharing factor and cap and floor summarised in table 1 of this document). This should avoid the potential for unintended consequences resulting from changes to parameters which are generally working well under the current scheme.

2.4. We have identified a number of areas where there is potential for improvements to the current framework which is in place. We consider that the bulk of these changes could continue or facilitate ongoing improvements under an enduring approach from 2017.

2.5. We would like your views on our proposal to introduce a two year scheme based on the existing incentive framework from April 2015 as opposed to undertaking a fundamental review at this stage.

#### *Changes to the BSIS target setting approach*

2.6. The target is a key aspect of the BSIS. An appropriate and reflective target maximises the incentives on NGET to go beyond business as usual to develop effective contracting strategies and make efficient decisions about the operation of the system. By setting an appropriate target we ensure that NGET is subjected to realistic opportunities for profit or loss so that it must outperform to share underspend. As 75 per cent of any savings are passed through to BSUoS customers within the cap and floor, and 100 per cent of savings passed through beyond this, consumers directly benefit from outperformance under the incentive. The target setting methodology is designed to balance the opportunity for profit and loss with protection against windfall gains or losses for NGET, and ultimately consumers.

2.7. The target setting approach of the current scheme is based on the outputs from two models (the Energy model and Plexos model). The Energy model is designed to calculate the costs for energy balancing which the SO would economically and efficiently incur. The Plexos model calculates the constraint actions and costs that the SO should economically and efficiently incur. Both models use a combination of ex ante and ex post data to calculate these costs. The outputs from

both combine to form an overall BSIS target against which the SO's costs are compared.

2.8. National Grid own the target setting models and are responsible for ensuring they set a robust and appropriate target. We validate these models at the start of the scheme and monitor NGET's use of the models on an ongoing basis. Where we identify outputs which may not be reflective of the agreed methodologies we challenge NGET to justify these outputs and provide us with confidence that they are appropriate.

2.9. To minimise the risk of windfall gains and losses, it is important that the target setting approach is able to adapt to developments to remain robust. Three mechanisms are built into the current incentives which allow changes to be made within scheme:

- Model or model input corrections: NGET can make amendments to the models or inputs to the models where limitations are identified which prevent them from setting an appropriate target. NGET must submit a full explanation to the Authority which has the ability to reject the changes if they have not been fully justified.
- Model input updates: As part of the mid-scheme review, NGET is able to update a number of agreed parameters to reflect market developments. For example, NGET can update the network boundary limits each year to reflect the latest information it has available regarding the year ahead outage plans. This allows NGET's constraint management performance to be benchmarked against more up to date information while also retaining an incentive for NGET to do as much as possible to fix these plans at the year ahead stage.
- Methodology changes: NGET can propose changes to the target setting methodologies as part of the mid-scheme review. These would consist of wider changes to how the methodology works rather than updating a single variable. NGET may do this where it believes that changes are needed to reflect market conditions or NGET's system balancing approach (eg NGET may propose to introduce new service definitions within the BSIS target). NGET must submit its proposal to the Authority which is able to reject or approve it depending upon justification of the case put forward.

2.10. We propose to retain a target setting approach which is broadly consistent with that used currently. The target would be identified through a set of models that are owned by NGET. We consider NGET to have the information and expertise available to forecast an effective target using the models.

2.11. However, we want to consider the governance arrangements which are in place. We will review these governance arrangements to ensure that the targets generated by the models are accountable and transparent. Currently, we place emphasis on our validation and monitoring of the models and model outputs. We would like to consider whether greater involvement of stakeholders and audit

processes to validate modelling processes could reinforce industry confidence and understanding of the models under an incentive scheme.

2.12. Under our proposals for a 2015-17 scheme we will maintain the model update mechanisms. Beyond these mechanisms, we will take the opportunity to consider whether further changes to the target setting approach or to the ability for within scheme change may help to ensure that the target remains as robust as possible.

2.13. An important input into any changes to the target setting methodology, governance processes, and the potential for within scheme changes will be our assessment of NGET's development of the models. We want to ensure that the models are identifying a robust scheme target which stakeholders can understand. If this is not the case then we would be more inclined to introduce greater scrutiny into the governance arrangements. We would also be less inclined to allow changes to be introduced to the target setting approach where these may risk unintended impacts or exacerbate the lack of transparency.

2.14. We are interested in your views on the target setting approach, the governance processes, and the potential for within scheme changes. Do you believe that the balance between certainty of a scheme target setting methodology and the potential for within scheme flexibility is appropriate? How do you think transparency of the models could be improved?

#### *Design of additional incentives*

2.15. Under the current incentive scheme we introduced four new mechanisms which sit alongside the core BSIS. These mechanisms are designed to incentivise NGET's performance in areas which can add benefit for the industry where this aligns with consumer interests.

2.16. These additional incentives were introduced in their current form as part of the 2013-15 scheme. As such, we see merit in reviewing their design. We will consider stakeholder views on whether it is appropriate to continue these incentives. If we do retain the incentives we will consider changes to the design and parameters of these incentives to reflect the learning that we, NGET and stakeholders may have identified through their application. We discuss these incentives and our expected scope for developments in the following section.

#### Model development licence condition

2.17. Under the model development licence condition<sup>12</sup> NGET has been assessing the performance of the target setting models. It has been considering the need for development of the models to ensure that they continue to be fit for purpose. In addition, the licence condition requires NGET to develop models which are robust,

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<sup>12</sup> Special Condition 4E of NGET's Special Licence Conditions

transparent and able to forecast system operation costs over an eight year time horizon.

2.18. The model development licence condition applies to the period up to April 2015. We expect NGET to make significant progress to assess current model performance and continue with model development under this licence condition before the current scheme expires.

2.19. We note that development need not mean an increase in sophistication. When developing the models we consider the push for transparency and robustness of the models to be a greater priority. Model development should be aimed at maximising the understanding of industry regarding how the models function and should minimise the scope for unexpected outputs from the models which may need to be de-bugged and repaired. Any additional sophistication of the models will need to be well justified and will need to be supported by evidence to show that the models and proposed developments are robust.

2.20. We will assess the progress which has been made under the model development licence condition when we introduce a 2015-17 scheme. We will consider the extent to which NGET has met its licence requirements and how any model developments should be reflected in the target setting approach used.

2.21. In line with our 2015-17 incentive scheme we propose to introduce a further model development licence condition to encourage NGET to build on ongoing progress in this area. This will provide time and experience for NGET to build on model development thus far and conduct a full review of the models which could derive a target as part of a future scheme. For example, we will expect NGET to consider more fully how models can best support the drive for longer term decision making. We intend to work with NGET and stakeholders to develop further requirements for development of the models.

2.22. Do you have any views on areas of functionality of the models that could be improved or introduced to benefit industry participants? How would you like to be engaged in the model development process?

#### Wind generation forecasting incentive

2.23. We introduced the wind generation forecasting incentive<sup>13</sup> at the time of setting the current scheme. This incentive allows NGET to make a monthly profit or loss of up to £250,000 based on the accuracy of its day ahead forecasting of wind generation levels. We expect the availability of a centrally identified level of wind generation along with ongoing evidence of the forecast accuracy to provide benefit to industry participants who are able to use this forecast to inform their own decision making.

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<sup>13</sup> Special Condition 4H of NGET's Special Licence Conditions



2.24. As we introduced this incentive at the commencement of the scheme we had a limited evidence base on which to identify incentive parameters. Based on application of the incentive we would now like to understand the benefits that stakeholders derive from improved forecasting accuracy. This will inform whether we retain the incentive and the extent to which we expand or reduce its scope.

2.25. We will review the performance data that we are collecting and monitoring under the current scheme to consider the incentive parameters should we retain the incentive. We will design these parameters to drive continued improvement reflective of the benefit that the industry derives from improved forecasting. We will also consider the merits of extending the incentive to other forecasts of generation that NGET publishes. This could include additional times at which NGET makes forecasts of wind generation. It could also include extension to other forms of intermittent generation such as solar photovoltaics.

2.26. To inform any changes to the design of the wind generation forecasting incentive we would like to hear your views. We are interested in the extent to which you use these forecasts and what for. We would also like to understand where changes to the incentive would add benefit for the industry, and ultimately consumers.

#### SO Innovation Roll-out Mechanism

2.27. We introduced the SO Innovation Roll-out Mechanism (SO-IRM)<sup>14</sup> as part of the current scheme with wide support from NGET and industry participants. It allows NGET to apply for up to £10 million of funding for the roll-out of innovation which can provide benefits to consumers beyond the two year length of the scheme.

2.28. NGET submitted two applications for funding under the SO Innovation Roll-out Mechanism as part of the 2014 mid-scheme update. Our decision on whether these applications meet the conditions required for funding and the extent of any funding provided will be published by the end of June.

2.29. Going through the process of submission and assessment is allowing both us and NGET to develop an understanding of the merits of the mechanism and learn lessons in relation to its design.

2.30. Our initial position is to extend the mechanism, making improvements to the application and review process where lessons have been identified. However we will continue to assess the merits and parameters of the funding mechanism through engagement with NGET and industry. We will look to ensure that any mechanism works within the overall incentive framework to encourage NGET to innovate where it can demonstrate that this adds enduring benefit for consumers.

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<sup>14</sup> Special Condition 4J of NGET's Special Licence Conditions

2.31. If this engagement suggests that the mechanism is not adding significant value then we may consider whether it should be removed or replaced with something which may capture our objectives more effectively.

2.32. To inform any changes to the SO Innovation Roll-out Mechanism we would like to hear your views regarding the benefits of the mechanism and processes involved. We would like to hear your thoughts on whether the mechanism introduces a new opportunity for NGET to work with third parties to roll-out innovation. We would also like to understand any experiences you may have had with the SO-IRM including any engagement with NGET in relation to potential or actual proposals.

#### Transmission losses licence condition

2.33. When we introduced the current scheme we replaced a financial incentive on transmission losses on the system with a reporting requirement on NGET<sup>15</sup>. Given the marginal control that the SO has on system transmission losses, we considered a reporting requirement to be more appropriate. We identified benefits for consumers from removing the financial incentive as a result of the reduction in the potential for windfall gains and losses.

2.34. NGET has been reporting on historic system transmission losses as part of its monthly balancing services statement. It also includes forward looking consideration of transmission losses as part of its electricity ten year statement. We will review the information that NGET has been publishing under its licence condition as part of the 2015-17 scheme. We will consider the benefit that this provides to the market and consumers. In this context we will consider whether the quality and quantity of information being published is appropriate.

2.35. To inform our approach towards this reporting requirement we are interested in your views. We would like to understand the value that you place on the reporting requirement and the extent to which you use or consider the information that NGET publishes on transmission losses on its website.

#### *SO-TO financial mechanisms*

2.36. The SO-TO code<sup>16</sup> sets out the processes which should be followed by the SO and TOs to coordinate outages on the transmission system. The SO is able to propose changes to this code to ensure that it remains appropriate and fit for purpose. Under this code the TOs should submit outage proposals to the SO who then forms a year ahead outage plan. TOs must request changes to this outage plan where needed to accommodate infrastructure build programs or in response to unexpected events which require re-planning of the outage program.

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<sup>15</sup> Special Condition 4I of NGET's Special Licence Conditions

<sup>16</sup> Section C, Part 2

2.37. In recent years the SO-TO code and planning processes have been subjected to increasing stress as a result of the intensive network design and build programs taking place. This is particularly the case in Scotland where network reinforcements are needed to accommodate increasing levels of renewable generation.

2.38. With the step change in SO-TO coordination requirements in mind, we developed the Network Access Policy (NAP) alongside RIIO-T1. The NAP is designed to encourage engagement between the SO and TOs and provide a consistent framework for how outage planning is carried out by all parties involved in the process.

2.39. The NAP has effectively enhanced coordination and communication between the SO and TOs with regards to outage planning. Benefits have been recognised by the parties involved. These include the greater understanding of the interaction between outage planning and constraint costs that the NAP has facilitated.

2.40. The parties to the NAP have however recognised the need for continuing review and have suggested that financial mechanisms are needed to support the NAP and enable optimal whole system cost decision making to be achieved. For example, TOs have provided examples of cases where additional build costs could facilitate overall savings to the consumer as a result of minimising the level of constraints. However, these additional costs would hit the TO's bottom line costs and not be recuperated through the RIIO price control. TO's have a statutory obligation<sup>17</sup> to operate an economic, efficient system meaning that they should act to ensure efficiency of the system as a whole where there is a clear benefits case. However, we want to consider whether it may be appropriate to support this requirement with financial mechanisms to drive whole system efficient solutions and ensure efficient allocation of costs and benefits between the SO and TOs.

2.41. We consulted on the content of the NAP in the summer and are considering approval in the near future. Such approval will recognise limitations of the NAP and will set out our intention to work with the SO and TOs to investigate the need for, and design of, financial mechanisms. As we develop our proposals for the 2015-17 scheme we will consider whether it is appropriate to introduce financial mechanisms to sit alongside the SO incentives.

2.42. We note that the development of financial mechanisms are somewhat delinked from the incentive scheme itself and may not be straightforward to implement. There are also a number of potential designs some of which may interact more strongly with the TO's regulatory framework under RIIO-T1.

2.43. In response to this consultation we are interested in your views on the need for, and design of, financial mechanisms to support the planning and coordination of outages to ensure whole system cost efficiency.

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<sup>17</sup> Section 9 of the Electricity Act 1989 sets out a requirement on transmission licensees to develop and maintain an efficient, co-ordinated and economical system of electricity transmission

*Greater transparency*

2.44. The SO sits at the centre of the electricity market. It regularly engages with the full range of market participants and has access to large amounts of centrally collated information. It has to take real time and forward looking decisions based on this engagement and information.

2.45. It is important that stakeholders have a good understanding of the contracting and utilisation decisions made by the SO, as this informs their own investment and operation strategies. Transparent decision making should in turn reduce system operation costs as clear signals are provided to the market, driving innovation, competition and efficiency.

2.46. Greater transparency also allows market participants to hold the SO to account for its actions. It provides a platform for stakeholders to provide input to the SO regarding improvements that they identify in terms of NGET's service procurement.

2.47. The SO's actions to balance the system will become increasingly important in the context of the emerging system operation challenges and with the expanding role of the SO, for example under the capacity mechanism. Transparency and accountability of the SO for its actions is potentially becoming more important than ever. The need for this transparency is particularly important given the need for flexibility and discretion in terms of how the SO operates the system.

2.48. The SO already publishes large amounts of information on its website and there are necessary limitations on what the SO is able to publish as a result of commercial sensitivities. However, some market participants have suggested that they do not understand how the SO makes its decisions regarding balancing procurement and utilisation. They see benefit in encouraging the SO to give clearer information regarding its decision making processes.

2.49. In response to this consultation we seek your views regarding the extent to which greater transparency is needed. We are interested in the areas where you believe that the current level of transparency is insufficient. Going forward we would like to understand whether you would find it useful to discuss transparency as part of some form of industry workshop which can inform development of our proposals.

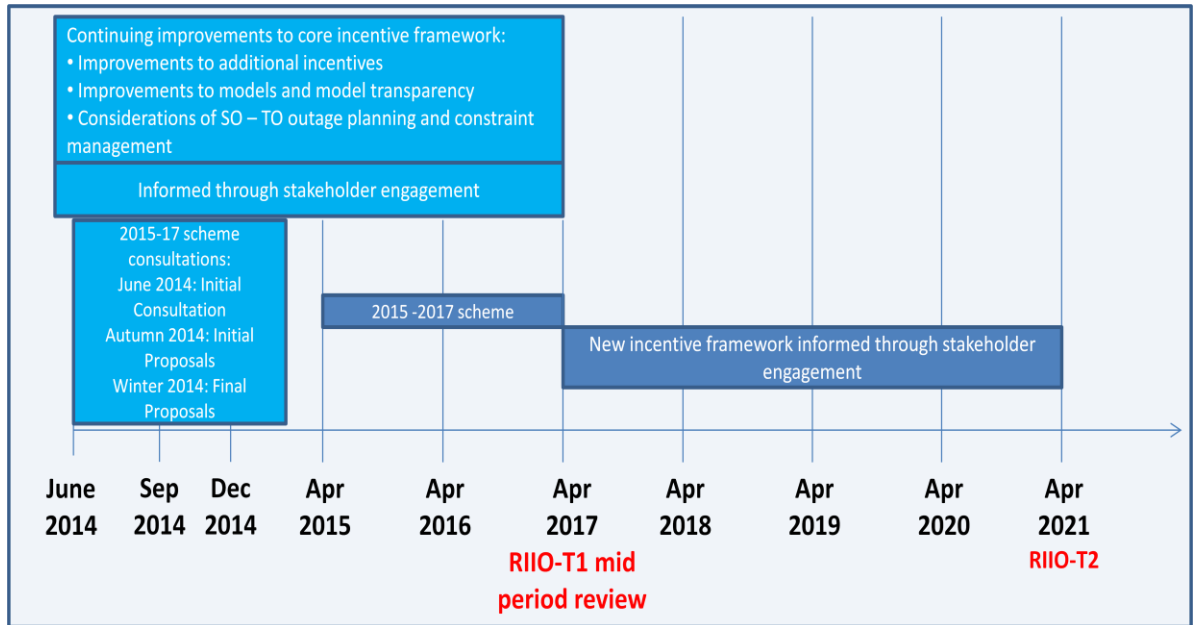
2.50. Our understanding of your views with regards to transparency will allow us to consider where improvements should be targeted. We will then consider where licence requirements or incentives can support the drive for greater transparency.

**Next steps**

2.51. We are interested in your views on our proposed scope for consideration of changes to the 2015-17 scheme. The deadline for responses to this consultation is 15 July.

## Electricity System Operator Incentives: Incentives from 2015

2.52. Following responses, we expect to publish our initial proposals for the incentive scheme to apply from 2015 in the summer of this year. We then expect to publish our final proposals in late 2014. Figure 2 sets out our intended process:



**Figure 2: Timeline for development of incentive schemes**

## Appendices

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## Appendix 1 - Glossary

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### 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 the SO 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.

#### Black Start

If the electricity system experiences a full or partial shut down, 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 the SO 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.

## **D**

### Demand side response (DSR)

The reduction of customer energy usage at times of peak demand in order to help system reliability, to reflect market conditions and pricing, or to support infrastructure optimisation or deferral of additional infrastructure.

## **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.

### 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 the SO 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 the SO 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 the SO 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 the SO'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 the SO of the high voltage electricity transmission system for 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 2 - Feedback Questionnaire

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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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