Balancing Principles Statement Report

October 2017 – September 2018

Published August 2020

Executive Summary

National Grid has developed the Balancing Principles Statement (BPS) in accordance with the Electricity Transmission Licence Standard Condition C16 requirements to define the broad framework within which balancing action decisions are made.

The BPS is intended to help electricity market participants understand actions National Grid may take to achieve the efficient, economic and co-ordinated operation of the transmission system. To assist with this, we have also held regular industry forums where we have provided data, detailed explanations of our balancing actions and answers to questions raised by participants.

This report demonstrates that throughout the period from 1 October 2017 to 30 September 2018, National Grid has operated the National Electricity Transmission System (NETS) in accordance with the guidelines set out in the BPS. Our compliance with the BPS is subject to independent external review. A statement from the External Auditor PriceWaterhouseCoopers (PwC) accompanies this report.

Key events highlighted in this report:

- **There were no Emergency Instructions issued to Balancing Mechanism Units (BMUs). However, there were three instances where non BM participants were instructed down by Emergency Instruction due to Localised Negative Reserve Active Power Margin Warnings (NRPAM).**
- **There were nine occasions where Interconnector Emergency Assistance was requested by National Grid and a single instance of an Emergency Assistance requested by other Interconnector parties**
- **No Demand Control instructions were issued over this reporting period.**
- **No National NRAPM warnings were issued. However, there were three occasions when localised NRAPM warnings were issued in for Scotland.**
- **There were no occasions of system or partial system shutdown or islanding. No Black Start services were called off.**
- **Our Balancing Mechanism (BM) IT systems achieved 99.999% availability (excluding planned outages) in this reporting period.**
- **There was a single instance of Involuntary Reduction of BMU output where bids were used to reduce the BMU trading position.**
- **There were eight occasions where BMUs were disconnected from the GB Transmission System due to faults. No Bid-Offer Acceptances (BOAs) were issued to these BMUs.**
- **Demand Side Balancing reserve (DSBR) was discontinued in Sept 2017 and there were no occasions where it had been instructed.**

1. BPS Part A: Introduction

National Grid has developed a Balancing Principles Statement (BPS) in accordance with Licence requirements to define the broad framework within which balancing action decisions are made.

The BPS report is intended to help electricity market participants understand actions National Grid may take to achieve the efficient, economic and co-ordinated operation of the National Electricity Transmission System.

An overview of the BPS is contained in Appendix 1.

Our compliance with the BPS is subject to independent external review and reflected in this Annual Report. Appendix 5 of this report contains an opinion from the external auditors.

2. BPS Part B: General Principles

The BPS is written to be consistent with our Transmission Licence obligation to operate the system in an efficient, economic and co-ordinated manner, whilst ensuring the security of the system at all times.

In determining which balancing measures to employ, we take account of various sources of information. These include Balancing Mechanism Unit (BMU) data, our demand forecasts, our Transmission outage plan, actual system conditions, and any other relevant data (Grid Code BC 1.4.2 (f)).

Throughout the period from 1 October 2017 to 30 September 2018, National Grid has operated the GB Transmission Systems in accordance with the general principles set out in the Balancing Principles Statement.

We are permitted in certain circumstances to operate the system outside the normal principles of Balancing Mechanism operation (as described in the BPS). Specific occurrences are covered in more detail below.

Category	Oct 2014 - Sep 2015	Oct 2015 - Sept 2016	Oct 2016 - Sept 2017	Oct 2017 - Sept 2018
Emergency Instructions	0[1]	0[3]	0[5]	0[7]
Interconnector Emergency Assistance	3	3	1	10
Demand Control	0	0	0	0
NRAPM Warnings	0[2]	0[4]	0[6]	0[8]
Black Start / Islanding	0	0	0	0
Maximum Generation Service	0	0	0	0
Availability of National Grid Balancing Mechanism systems	99.86%	99.99%	99.99%	99.99%
Involuntary Reductions	2	2	0	1
No. of occasions BMUs disconnected by Transmission System Faults	21	11	7	8
Demand Side Balancing Reserve (DSBR)	N/A	1	0	N/A

Note 1: 12 Emergency instructions issued to BELLA wind farms (non BM participants)

Note 2: 10 Localised NRAPMS issued for Scotland in Year End Sept 2015

Note 3: 6 Emergency instructions issued to BELLA wind farms (non BM participants)

Note 4: 17 localised NRAPMs issued for Scotland in Year End Sept 2016

Note 5: 4 Emergency instructions issued to non BM participants

Note 6: 5 localised NRAPMs issued for Scotland in Year End Sept 2017

Note 7: 4 Emergency Instructions issued to non BM participants in Year End Sept 2018

Note 8: 3 localised NRAPMs issued for Scotland in Year End Sept 2018

2.1 Emergency Instructions

In certain circumstances, we may need to issue Emergency Instructions or Involuntary Reductions in order to preserve the integrity of the National Electricity Transmission System (NETS) and any synchronously connected external system. These circumstances may include system events and situations involving the requirement for demand control, Negative Reserve Active Power Margin, Black Start, frequency response and communication failure. In these circumstances, it may be necessary to depart from normal Balancing Mechanism operation in accordance with Grid Code BC2.9.

There were no instances of Emergency Instructions issued to BMUs; however, there were three instances where Emergency Instructions were issued to non BM participants generating in the these localised areas. See Appendix 2 for details.

There were no requests made for Maximum Generation Service.

There were nine occasions where Interconnector Emergency Assistance was requested by National Grid. There was one occasion where Interconnector Emergency Assistance was provided by National Grid. (Grid Code section BC2.9.6). See Appendix 3 for details.

2.2 Demand Control

A situation may arise in BM timescales where there is insufficient active power generation available to meet demand, or there may be local operating problems on part of the transmission system. Under these circumstances, it may be necessary for Network Operators and National Grid to make provisions for the reduction of demand in accordance with Grid Code OC6.

No Demand Control Actions were issued during the reporting year.

2.3 Demand Side Balancing Reserve (DSBR)

The Demand Side Balancing Reserve was discontinued in September 2017.

The information has been included in this report due to historical instances.

2.4 Negative Reserve Active Power Margin

To ensure system security, National Grid must always be able to schedule sufficient frequency responsive plant to contain system frequency against the largest credible loss of generation or demand. Under conditions of low system demand (particularly overnight demand minimums during summer weekends), the generation notified to us may not include enough plant capable of providing this response. Under these circumstances, we would normally accept bids to desynchronise un-responsive plant and accept offers to replace this plant with more responsive generation.

However, in extreme cases, there could be an insufficient volume of bids available to reduce the level of unresponsive generation. In these circumstances, National Grid would issue Negative Reserve Active Power Margin (NRAPM) warnings to the market to signal the shortage of responsive plant and request additional plant flexibility. If the NRAPM warnings have no effect, as a last resort National Grid could instruct plant to desynchronise under these NRAPM conditions in accordance with Grid Code section BC2.9.4. A localised NRAPM is issued where the same conditions exist, but in a localised area, usually due to a constraint on the system.

No National NRAPM warnings were issued nationally. However, there were three localised NRAPM warnings issued for constraint groups in Scotland. See Appendix 2 for details.

2.5 Black Start / Islanding

Under extreme conditions (e.g. multiple circuit tripping during severe weather), parts of the National Electricity Transmission System could become disconnected from the main system, or islanded. In addition, there could be a "partial shutdown" where all generation has ceased within an island, or a "total shutdown" where all generation has ceased in the total system and there is no electricity supply from external Interconnectors.

Grid Code section OC9 describes the implementation of recovery procedures following a total or partial shutdown (Black Starts), the re-synchronisation of islands and the Joint System Incidents Procedure which would apply under the above circumstances. National Grid has Ancillary Service contracts with certain generators to provide a Black Start capability to re-establish supply following a partial or total system shutdown.

There were no occasions of system or partial system shutdown or islanding. No Black Start services were called off (excluding routine testing).

2.6 Communication Failures

This subject is covered in both Grid Code BC2.9.7 and BPS Part B section 5(g). A communication failure is defined in the BPS as an "*unplanned outage of the electronic data communication facilities or National Grid's associated computing facilities preventing normal Balancing Mechanism operation*". Under these circumstances, National Grid will normally issue a "National Grid Balancing Mechanism IT System Failure" as soon as it is reasonably able to do so. This will normally be issued via the Balancing Mechanism Reporting System (BMRS), where possible will indicate the likely duration of the outage.

Our Balancing Mechanism IT systems achieved 99.99% availability (excluding planned outages) in this reporting period. There was a single occasion on 29 October 2017 where the BM system stopped profiling Bid-Offer Acceptances (BOAs) due to erroneous data for a wind BMU. The total disruption took just over an hour to be resolved, however affected stations had confirmed that they had received, accepted and actioned BOAs.

2.8 Involuntary Reductions

This subject is covered in BPS Part B section 6. Under certain exceptional circumstances, National Grid may need to instruct reductions in generation or demand before all valid and relevant Balancing Mechanism bids or offers have been accepted. This could be to preserve system response or reactive reserve levels, or as a result of automatic measures (e.g. the operation of intertrip services not covered by commercial agreements), or because communication problems prevent other relevant bids or offers being instructed. Involuntary Reductions include Demand Reduction and Disconnection as referred to in Grid Code OC6.

There was one instance where bids were sent to a BMU due to transmission connections issues. See Appendix 4.

3. BPS Part C: Principles underlying Balancing Measures

There are a number of principles described in the BPS that underpin the measures National Grid will take to balance the system. The balancing measures include the acceptance of bids and offers, utilisation of Balancing Service contracts, other commercial services, instruction of Emergency Actions and other Involuntary Reductions. These measures are called off in cost order unless this is not possible under circumstances described in Part C section 5. Part C also describes the treatment of BMUs disconnected by Transmission System faults.

We have used balancing measures in cost order wherever possible during this reporting period, with exceptions being in line with the circumstances described in BPS Part C Section 5. For more information on Balancing Services please see the National Grid website under Balancing Services, Monthly Balancing Services Summary Report. See Appendix 5 from our External Auditors.

https://www.nationalgrideso.com/c16-statements-and-consultations

3.1 Treatment of BMUs disconnected by Transmission System faults

This subject is referred to in BPS Part C paragraph 6. Following transmission system faults, BMUs may become instantaneously disconnected from the transmission system. Under such circumstances following the fault and prior to reconnection, we would only issue a BOA to the affected BMUs if the trade provides immediate assistance to us in controlling the transmission system.

There were eight occasions where BMUs were disconnected due to Transmission System faults. These are summarised in the table below. The majority of the BMUs affected were less than 20MW, hence the generation losses would have been covered by normal frequency response. Where the units or total loss of generation were over 20MW an inspection of the actions after the trip were investigated and more expensive units were not instructed to cover for the generation loss. No BOAs were issued to these BMUs, nor were any issued to these units Post Event.

Category	SHETL	SP	NGT E&W
Weather	1		
Transmission Eqpt Failure		1	
Field Issues	3	2	
Unknown		1	

3.2 Pre Gate Closure BMU Transactions

Contracts will be entered outside the BM when we anticipate:

- A shortage of appropriate Offers and Bids in the BM to meet system security requirements
- We consider that such contracts will lead to a reduction in overall cost or provide technical characteristics that are not available through BM Offers and Bids.

No Pre Gate Closure BMU Transactions (PGBTs) were issued in this reporting period. When PGBTs are issued, they would be reported through the Monthly Balancing Services Report located on the National Grid website.

https://www.nationalgrid.com/uk/electricity/market-operations-and-data/system-balancing-reports

4. BPS Part D: Transmission Constraint Management and Reserve/Response Principles

We employ a number of principles for the management of transmission constraints and response/reserve holdings. These include outage planning from year ahead to day ahead, security studies, constraint cost forecasting and negotiating Balancing Service contracts. BPS Part D also describes the calculation of response and reserve holding levels, allocation of holdings with due regard to cost, delivery dynamics and transmission constraints, and regaining levels of response holding following delivery.

We have managed transmission constraints and response/reserve holdings during this reporting period in line with the principles described in BPS Part D.

5. BPS Part E: Day Ahead and Within Day Balancing Processes

BPS Part E describes the Day Ahead and Within Day balancing processes – the Scheduling and Control phases. At the Day Ahead stage, this includes publishing day ahead demand forecasts, performing security studies, calculating reserve/response levels and calculating half hourly system plant margins. It also includes forecasting constraint costs, calling off Balancing Service contracts and revising the national and Zonal margin data.

Within Day includes releasing revisions to the demand forecasts and margin data to the Balancing Mechanism Reporting System, performing additional security studies, reassessing the need to call off Balancing Service contracts, and balancing the system minute by minute through the deployment of Balancing Services on an economic basis.

We have managed the Day Ahead and Within Day balancing processes during this reporting period in line with the principles described in BPS Part E. See Appendix 5 from our External Auditors

6. BPS Part F: Summary of GB Operational Security Standards

BPS Part F summarises the Operational Security Standards used by National Grid. We operate the system within these standards in order to maintain system security. The system is normally secured against certain specific "secured events" as defined in Part F – for example the fault outage of a double circuit overhead line.

We have planned and operated the GB Transmission System to a single GB Security and Quality of Supply Standard (GB SQSS).

The Loss of supply, frequency and voltage excursions outside statutory limits are reported separately in accordance with Standard Condition C17 of the Transmission Licence.

https://www.nationalgrid.com/uk/electricity/market-operations-and-data/transmission-performance-reports

7. BPS Part G: Exceptions to the BPS

Infrequently, circumstances may arise which require us to operate outside the principles described in the BPS. The specific examples identified in BPS Part G are:

- Black start
- System islanding
- When emergency control centre evacuation procedures have been invoked or widespread communication problems
- Circumstances where operating within the BPS would prejudice the safe and secure operation of the system
- Insufficient time available to balance the system in accordance with the BPS.

Actions were taken as described in the subsections above to ensure the safe and secure operation of the GB Transmission System, to avoid breaching our statutory obligations or where insufficient time was available to employ alternative measures to achieve balancing.

8. Future Reports

BPS reports are prepared by National Grid in accordance with the timetable set out in our Transmission Licence Standard Condition C16.

For further information on this report, please contact:

Compliance Manager

E-mail: BM.liaisonandcompliance@nationalgrideso.com

Appendix 1 – Overview of the Balancing Principles Statement

I. The Purpose of the Balancing Principles Statement

The BPS has been developed by National Grid to assist electricity market participants to understand our actions in achieving the efficient, economic and co-ordinated operation of the transmission system.

National Grid is required by Transmission Licence Standard Condition C16 section 5 to establish and maintain a BPS to define the broad framework within which we make balancing action decisions.

II. Changes to the BPS

The BPS is approved by OFGEM and may only be modified in accordance with the processes set out in Transmission Licence Standard Condition C16.

Where changes are required to the BPS in advance of the annual update then, subject to approval, a BPS supplement may be issued.

The version of the BPS (version 15.0) was issued on 1 April 2017. The changes to these versions were due to the annual review of the BPS.

III. Further information

Copies of the BPS are available from the National Grid website.

https://www.nationalgrideso.com/c16-statements-and-consultations

For further enquiries relating to the BPS, please contact:

Commercial Codes Manager
National Grid ESO
Faraday House,
Gallows Hill
Warwick,
CV34 6DA

Email address
BalancingServices@nationalgrid.com

Appendix 2 - Emergency Instructions and Localised NRAPMs

List of Non BM participants instructed via emergency action

Non BM participants are intermittent or embedded generation who choose to not actively participate in the Balancing Mechanism. These units do not submit physical notifications or bid offer data to the Balancing Settlement Code Company (BSCCo)-Elexon and are therefore not liable for Balancing Services Use of System Costs. However, if they are positioned in an area with transmission constraints and would add to the overloading of circuits, they can be instructed to come off the system via an emergency instruction. It must be noted that these actions are only taken when no other options are available in the BM. The following 4 units were instructed off the system via an Emergency Instruction either while a Localised NRAPM was in force, or a transmission issue required the unit to be desynchronised. Please see below for details

Non BM Participant (NG ID)	Time From (GMT)	Time To (GMT)	Localised NRAPM in force
CAUSW-1	04/05/2018 16:37	04/05/2018 18:30	YES
NOVAW-2	04/05/2018 16:46	04/05/2018 17:00	YES
CAUSW-1	05/05/2018 16:58	05/05/2018 17:17	YES
NOVAW-2	05/05/2018 17:08	05/05/2018 17:17	YES

More information on non BM participants (Bilateral Embedded Licence Exemptible Large Power Station Agreement (BELLA) / (Bilateral Embedded Generation Agreement (BEGA) bilateral contracts) can be found on the National Grid website.

https://www.nationalgrid.com/uk/electricity/industrial-connections/applying-connection

- **Friday 04 May 2018:** The wind generation output remained high longer than expected across Northern Scotland and had been predicted to fall. Trades had already in acted to BELLA windfarms which had expired. In high wind periods the generation output in this area may be higher than the transmission capacity available. An Inadequate Localised NRAPM warning for Northern Scotland was issued at 16:40 to cover the interval between 16:40 to 18:30, to request generators within the group to review their flexibility and to indicate to them that Emergency Instructions may be required with a possibility of enacting trades with BELLA windfarms in the area. Emergency instructions were issued to Causeymire unit 1 and Novar unit 2 to reduce output as the generation output within the constraint had not reduced. The localised NRAPMs were cancelled at 18:30 when trades expected to come into effect. The Emergency instructions were cancelled at 18:30 and 17:00 respectively.

- **Saturday 05 May 2018:** Due to late return of a planned double circuit outage a localised NRAPM was issued at 16:58 for Caithness in Northern Scotland for generators in the constraint area to reduce their output. The expiry of earlier trades and lack of available bid volume in the area required Emergency Instructions to Causeymire unit 1 and Novar Unit 2 to be issued at 16:58 and 17:08 respectively. The localised NRAPM was cancelled at 17:54 after the circuit was returned from outage and the Emergency Instructions were both cancelled at 17:17

- **Monday, 10 September 2018:** A Localised NRAPM was issued for the Dumfries & Galloway area 19:30 due to high winds and possible overloading of a circuit due to a planned outage on an adjacent circuit. The Localised NRAPM was issued between 19:30 and 09:00 the following day. Trades were initiated with two windfarms and following discussions with Scottish Power TO concerning the overloading, the distribution company reduced the output of Kendoon Power Station bringing the circuit loading back to acceptable limits. No Emergency Instructions were made.

Appendix 3- Interconnector Emergency insrtruction/Assistance

- **Sunday 29 October 2017 22:23 - 22:35:** GB to France. At 22:20 the Frequency started to rapidly rise from 49.98Hz, reaching 50.410Hx by 22:24. Demand at the time was dropping with expectations with no pump storage or Interconnector movements. Defensive actions were taken which included 500MW Emergency Assistance from the French Interconnector RTE. The IFA interconnector resumed normal operating at 22:35

- **Wednesday 22 November 23:08 - 23 November 2017 00:05:** NGC to France. A trade with a counter party to manage the ROCOF limit on the French Interconnector between 2300 and 0000hrs was not carried out by the counter party. As no SO-SO trade volume was available during this period it was necessary to carry out an Emergency Assistance trade for this period on IFA to manage contain the ROCOF loss.

- **Tuesday 12 December 2017 06:00 - 07:50**: France to GB. At 05:33 GB was importing 50MW from France when the ENCC received a alert from RTE starting that there was a risk of Emergency Assistance on the IFA interconnector. At 05:40 as further message was received for 900MW Emergency Assistance from France to GB starting at 06:00. at the time the transfer programme was to go to 1900MW (GB to France) from 05:50. RTE subsequently reduced the If capability to 100MW GB to France between 06:00 to 07:00

- **Tuesday 26 December 2017 00:00 -- 05:00:** GB to France. With low demands and high wind generation expected overnight. Trades were requested from RTE and Netherlands (BritNed) to reduce the transfer due the RoCoF limits and downward regulation. Between 23:00 and 05:00 it was only possible to secure 200MW Sell volume on the French Interconnector which left the transfer on both French bipoles at 900 MW import to GB. At 00:30 Emergency Assistance was requested from RTE to reduce the flow on each bipole to that of the RoCoF limit.

- **Wednesday 28 February 2018 17:00 -- 18:00:** GB to France. The temperatures across Western Europe are being affected by a period of cold weather and Met Office Yellow and Amber warnings of snow are currently active for GB. The French interconnector was anticipated to be exporting 2 GW between 17:00 and 18:00 due to market actions across Europe. During the morning two large power stations unexpectedly desynchronised with a total 1145 MW loss of over the darkness peak. From 14:09 Emergency Assistance stage 1 was withdrawn by RTE, leaving stage 2 which required demand control actions to be taken. At 15:10 RTE redeclared the availability if stage 1 Emergency Assistance Stage 1 and at 16:16 500MW was requested between 17:00 to 18:00.

- **Friday 09 March 2018 20:33 – 23:30**: GB to Northern Ireland. Due to an issue with a switch-disconnector at Hunterston Power Station, the operational tripping scheme for the Moyle Interconnector could not be selected due to the Ayrshire planned outage work. An Emergency Instruction was verbally given to SONI instructed so that the MOYLE interconnector was loaded at 239MW Export form GB to Moyle which was achieved at 21:21 due to the 5MW/min ramp rates. The switch disconnector was restored at 23:14. A verbal instruction to SONI at 23:20.

- **Friday 16 March 23:43 – 17 March 2020 06:40:** GB to Netherlands. At 14:02 the Netherlands interconnector tripped whilst operating at 0MW. The subsequent to return to service, the ENCC were informed that the capacity auction was cancelled for 23:00 to 15:00 the following day. As a result of this calculation, the ENCC were unable to place trades to reduce the flow on the interconnector in order to manage the RoCoF levels. The European Awareness System (EAS) was changed to Alert status at 22:15. At 23:35 the RoCoF levels dropped below the interconnector infeed level and due to the lack of other options, and Emergency Action was issued to TenneT. Once the RocoF levels returned to acceptable levels the instruction was cancelled at 06:40

- **Thursday 10 May 2018 01:10 - 04:00:** GB to France. Overnight trades were requested on both BritNed and IFA to reduce the transfer on each bipole to below the current RoCoF limit. However, between 00:00 and 05:00 insufficient trades had been secured on IFA leaving a 900MW import to GB. Additional generation was dispatched and pumped storage were given SPIN instructions increase the inertia on the system. In addition to the above it was necessary to request 100MW Emergency Assistance (GB to France) from RTE between 02:40 and 05:00.

- **Tuesday 11 September 2018 00:10- 04:00:** GB to France. The submitted reference programmes for both IFA and BritNed interconnectors indicated a flow of 1000MW each toward Europe. As per normal process

trades were enacted on both interconnectors to 710 MW bringing them in line with the current RoCoF management levels. However, these trades were both unwound by market participant leaving flows in an excess of the 700MW RoCoF limits between 01:00 and 02:00rs on the IFA interconnector. Due to the interconnector market gate closure the ENCC were unable to trade out this position. The EAS was put on alert at 01:10 and the emergency commercial service (XBAR) with BritNed to hold the flow on the interconnector at 710MW between 01:00 and 02:00. RTE was made aware of the GB system Alert and a such submitted prices which allowed a SO- SO trade to be enacted between 02:00 and 03:00, however prices were not submitted for 03:00 to 04:00. A SO-SO trade was made using the excess energy prices for this time to secure the system. As both flows were returned to below the 710MW limit the EAS was changed to normal.

- **Sunday 30 September 2018 01:10 – 03:00:** GB – Netherlands. The submitted refence program fro BritNed overnight indicated a flow of 1000MW into the GB from Continent. Trades that had been made to reduce the flow were subsequently unwound by market participants leaving flows more than the 750MW RoCoF limit between01:00 and 03:00. Due to the interconnector market gate closure the ENCC were unable to re trade the position. The EAS was set to alert and an XBAR emergency commercial service was enacted in lieu of formal trading facilities at 00:05 between 01:11 and 03:00; essentially reducing the flow by 200MW between 01:00 and 02:00 and 94MW between 02:00 and 03:00. During this time the RoCoF limits were reviewed several time and remained above the BritNed Flow. The BritNed interconnector flow returned below 763MW at 03:00 allowing the XBAR service to end and the EAS to return to normal

Appendix 4 - Involuntary Reductions

Monday 13 August 2018. Damhead Creek unit 1: at 04:03 the first main protection failed at the Damhead Creek-Kingsnorth 400kV circuit and ETO staff were requested on site to investigate the issue. Damhead Creak was intending to synchronise at 06:31(BST) and BOAs were sent to delay the unit 07:30. At 05:50 the ETO staff confirmed that the issue would could not be resolved that day as parts were required to fix the issue and the circuit was switched out at 07:44. The control point was then told that the connection was unavailable due an unplanned outage and would be subject to CAP48 payments due to this unplanned outage.

The circuit was returned to service at 22:16 on 15th August 2018.

Appendix 5 - Review opinion by PricewaterhouseCoopers

Private & Confidential

The Directors
National Grid Electricity Transmission plc
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

14 December 2018

Our ref: CW

Dear Sirs

Report on compliance with the Balancing Principles Statement for the year ended 30 September 2018 ("the Year")

1 We have reviewed the extent to which National Grid Electricity Transmission plc ("NGET"), in its procurement and use of Balancing Services, has complied with the Balancing Principles Statement ("BPS") for the year ended 30 September 2018.

2 We have completed this audit work in accordance with the Form of Agreement, Project Proposal WS942194761 agreed between ourselves and National Grid Electricity Transmission Plc on 11 December 2017.

3 The Form of Agreement includes a clause limiting the total liability of PricewaterhouseCoopers LLP to NGET and all others authorised to rely upon this work, to a maximum of, unless otherwise specified in a Project Schedule, 200% of the charges incurred (excluding VAT).

4 Unless the context otherwise requires, words and expressions defined in the BPS, which is a document prepared by NGET pursuant to Paragraph 5 of Condition 16 of its Transmission Licence, have the same meanings in this report as in that statement. During the Year, the BPS has been updated. The versions relevant to our opinion are:

a. Version 15.0 dated 1 April 2017; and

b. Version 16.0 dated 1 April 2018.

Respective responsibilities of NGET and Balancing Principles Statement Auditor

5 NGET is responsible for taking all reasonable steps to ensure its compliance with the BPS, in respect of its use of Balancing Services.

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6 It is our responsibility, within the Terms of Reference, to review on a sample basis, the compliance of NGET with the BPS in respect of the use of Balancing Services. This work is performed with a view to expressing an independent opinion as to whether NGET has complied with the relevant requirements in the Balancing Principles Statement.

Independence and Quality Control

7 We complied with the Institute of Chartered Accountants in England and Wales ("ICAEW") Code of Ethics, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

8 We apply International Standard on Quality Control (UK) 1 and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Basis of review and scope of work

9 We have performed the reasonable assurance engagement in line with the requirements of the International Standard on Assurance Engagement 3000 (Revised), - '*Assurance engagements other than audits or reviews of historical financial information*' issued by the International Auditing and Assurance Standards Board.

10 We have planned and performed our review in accordance with our review approach dated 10 December 2018, which we have agreed with NGET and which is set out in our document "Supplement to the Balancing Principles Statement report for the year ended 30 September 2018" ("the Supplement") which we have sent to both NGET and the Office of Gas and Electricity Markets ("Ofgem").

11 The Supplement provides a detailed description of the approach we have adopted to the review. In particular, it describes those aspects of Balancing Services that we have examined during our review and those which are outside the scope of this review. Our review included an examination, on a test basis, of both the Balancing Services procured and used by NGET, and of the estimates and judgements made by NGET in using Balancing Services. This report should be read in conjunction with the Supplement.

12 In reaching our conclusion we assessed the risk of a material breach of the way NGET has used Balancing Services compared with the requirements of the BPS, whether caused by fraud or other irregularity or error, and determined the adequacy of procedures and controls established by NGET to eliminate or reduce such risks.

Opinion

13 Based on our procedures, in our opinion, NGET has complied with the relevant requirements in the Balancing Principles Statement in all material respects, during the year ended 30 September 2018, with regards to:

- the receipt and validation (including application of default data) of Physical Notification ("PN") data;
- the consistency of demand and operational data provided to market participants during the Day Ahead and within day balancing processes to data used internally by NGET and confirmation that the required timetable for the issue of this data has been met;
- the call-off of Balancing Services in cost order during the Day Ahead balancing process. Balancing Services to include Ancillary Services active power contracts only;
- the call-off of Balancing Services in cost order during the within day balancing process. Balancing Services to include Ancillary Services active power contracts and accepted Bids and Offers in the Balancing Mechanism including Pre Gate Closure BMU Transactions ("PGBTs"); and
- NGET's adherence to internal operating procedures for activities that impact the call-off of Balancing Services during the day-ahead and within day balancing processes. For the avoidance of doubt, this includes internal operating procedures that relate to the management of transmission constraints and response/reserve holdings during the day-ahead and within day balancing processes.

Use of this report

14 This report is intended solely for the use of the Directors of NGET and Ofgem. While we acknowledge that this report will be published on the NGET website, this is for information purposes only and we do not intend that it should be relied upon by anyone other than the parties mentioned above (where terms are agreed with Ofgem in writing).

15 The maintenance and integrity of that website is the responsibility of the Directors of NGET. The work that we carried out does not involve consideration of the maintenance and integrity of that website and, accordingly, we accept no responsibility for any changes that may have occurred to this report since it was initially presented on the website.

16 This report has been prepared in the expectation that NGET and Ofgem will have sufficient experience of Balancing Services to understand the scope of our review without further background explanation and to evaluate the contents of this report in the context of the scope of our work.

Yours faithfully

PricewaterhouseCoopers LLP

PricewaterhouseCoopers LLP, Birmingham
Chartered Accountants