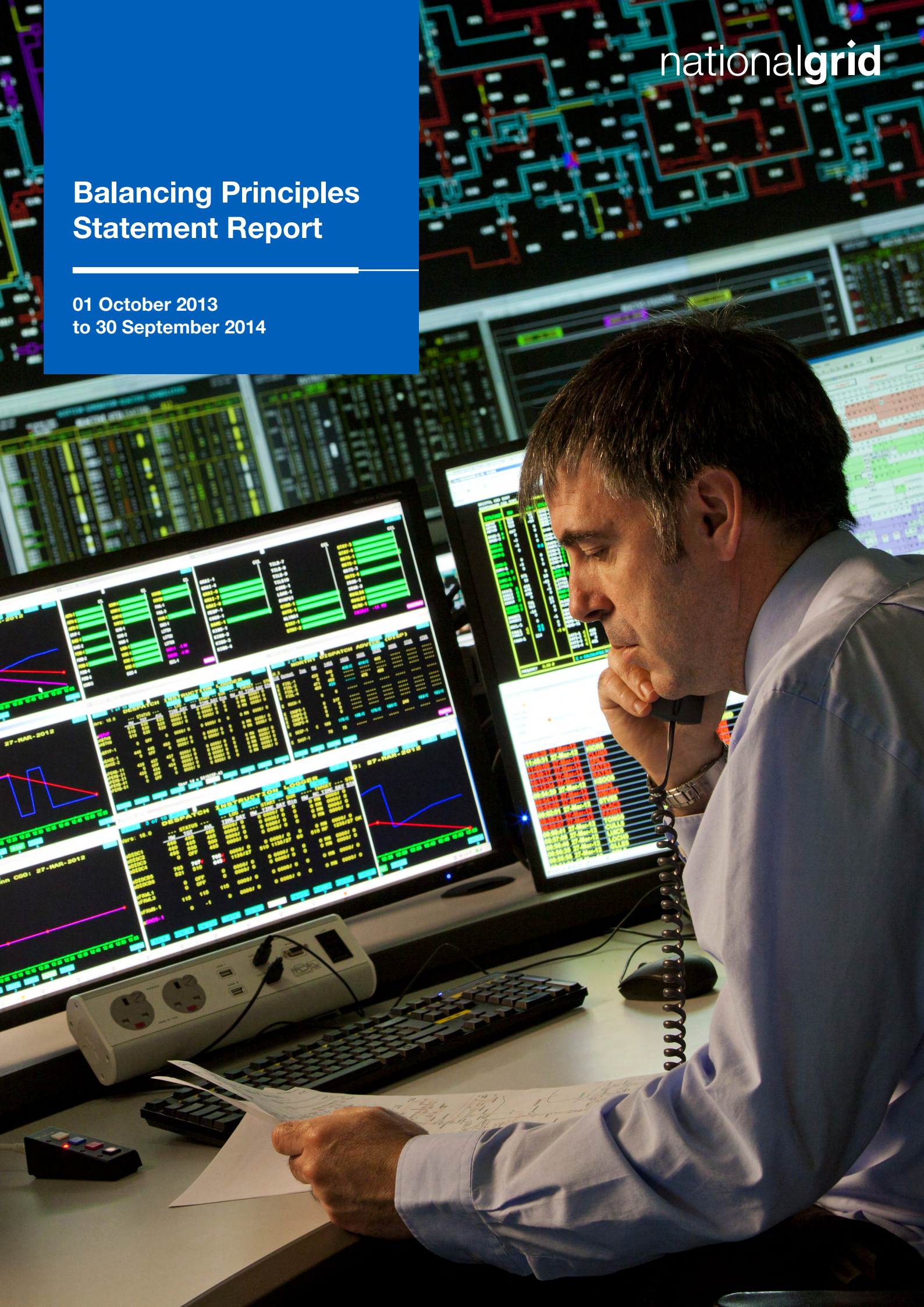
nationalgrid

Balancing Principles Statement Report

01 October 2013
to 30 September 2014



Balancing Principles Statement Report

01 October 2013 to 30 September 2014

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Balancing Principles Statement Report

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Executive Summary

National Grid has developed the Balancing Principles Statement (BPS) in accordance with Licence requirements to define the broad framework within which balancing action decisions are made.
The BPS is intended to help electricity market participants to 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 fora 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 2013 to 30 September 2014, National Grid has operated the National Electricity Transmission System (NETS) in accordance with the guidelines set out in the Balancing Principles Statement. Our compliance with the BPS is subject to independent external review. A statement from the external auditor (PricewaterhouseCoopers) accompanies this report.

Key events highlighted in this report:

- There were no Emergency Instructions issued to BMUs; however, one non BM participant was instructed down by Emergency Instruction. There were no requests for Maximum Generation Service.
- There were 2 occasions where Interconnector Emergency Assistance was requested by National Grid, and 1 occasion where Interconnector Emergency Assistance made to National Grid.
- No Demand Control instructions were issued over this reporting period.
- No Negative Reserve Active Power Margin (NRAPM) Warnings were issued. However, there were 3 occasions when Localised NRAPM Warnings were issued.
- There were no occasions of system or partial system shutdown or islanding. No Black Start services were called off.
- Our Balancing Mechanism IT systems achieved 99.94% availability (excluding planned outages) in this reporting period.
- There were 7 instances of Involuntary Reduction by BMUs.
- There were 14 occasions where BMUs were disconnected from the GB Transmission System due to faults. No BOAs were issued to these BMUs.

Balancing Principles Statement Report

01 October 2013 to 30 September 2014

1. BPS Part A: Introduction

National Grid has developed a Balancing Principles Statement (BPS) in accordance with Licence requirements in order 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 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 4 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)).

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). 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.

Throughout the period from 1 October 2013 to 30 September 2014, 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.

The following table summarises the reporting sections for the last 4 years

Category	Oct 2010 - Sep 2011	Oct 2011 - Sep 2012	Oct 2012 - Sep 2013	Oct 2013 - Sept 2014
Emergency Instructions	32[1]	1	8	0
Interconnector Emergency Assistance	1	3	4	3
Demand Control	1	1	0	0
NRAPM Warnings	1[2]	0[3]	0[5]	0[6]
Black Start/ Islanding	0	0	0	0
Maximum Generation Service	0	0	0	0
Availability of National Grid Balancing Mechanism systems	99.97%	99.99%	100.00%	99.94%
Involuntary Reductions	4	3	2	7
No. of BMUs disconnected by Transmission System Faults	9	11[4]	27	14

Note 1: Emergency instructions issued to intermittent generation in Scotland.
Note 2: There was one incidence of Localised Negative Reserve Active Power Margin on 22 September 2010 07:00 to 12:00 due to intermittent generation in Scotland.
Note 3: 1 localised NRAPM issued for Scotland due to High wind Output forecast overnight 16/08/2012, but cancelled.
Note 4: **Due to inconsistent reporting last year all generation, not just BMUs were included in number of units disconnected from the transmission system due to faults. The results above refer to BMUs only.**
Note 5: 5 localised NRAPMs issued for Scotland throughout the year.
Note 6: There were 3 occasions where Localised NRAPMs were issued for Scotland.

2.1 Emergency Instructions

In certain circumstances, it may be necessary for National Grid to issue Emergency Instructions in order to preserve the integrity of the National Electricity Transmission System and any synchronously connected external system. In such circumstances, it may be necessary to depart from normal Balancing Mechanism operation in accordance with BC2.9 of the Grid Code.

There was no instances of Emergency Instructions issued to BMUs; however, there was one instance where an Emergency Instruction was issued to intermittent wind generation which is not a BM participant. See Appendix 2 for details.
There were no requests made for Maximum Generation Service.

There were 2 occasions where Interconnector Emergency Assistance was requested by National Grid. There was 1 occasions were Interconnector Emergency Assistance provided by National Grid. (Grid Code section BC2.9.6).

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 Negative Reserve Active Power Margin

In order 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. A localised NRAPM is issued where the same conditions exist, but in a localised area, usually due to a constraint on the system.

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 issues 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.

No NRAPM warnings were issued nationally. However, there were 3 localised NRAPM warnings issued for constraint groups.

Details of such local NRAPM warnings are covered in Appendix 2 which provides details of Emergency Instructions.

2.4 Black Start / Islanding

Under extreme conditions (e.g. multiple circuit trippings 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).

2.5 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 Computing System Failure Notification" 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.

There have been two instances where unplanned Balancing Mechanism outages were announced on the BMRS. The first lasted between 20:52 and 23:20 on 31 May 2014 and the second between 20:24 and 23:06 on 3 September 2014.

Our Balancing Mechanism IT systems achieved 99.94% availability (excluding planned outages) in this reporting period.

2.6 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 an intertrip), or because communication problems prevent other relevant bids or offers being instructed. Involuntary Reductions include Demand Reduction and Disconnection referred to in Grid Code OC6.

There were 6 occasions when involuntary reductions were carried out, one of which was as a result of deemed bid acceptance, one a transmission fault causing the power station to reduce its output, and the last was to an offshore transmission company . Further Details can be found in Appendix 3.

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 Ancillary 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.

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 14 occasions where BMUs were disconnected due to Transmission System faults. These are summarised in the table below. No BOAs were issued to these BMUs

Number of BMUS Disconnected	SHETL	SP	NGT
Weather	3	0	3
Transmission Eqpt. Failure	0	1	0
Field Issues	4	1	2
Unknown	0	0	0

3.2 Pre Gate Closure BMU Transactions

Contracts will be entered into outside the BM when we anticipate a shortage of appropriate Offers and Bids in the BM to meet system security requirements, or if 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 PGBTs were issued in this reporting period. When PGBTs are issued they would be reported on the Monthly Balancing Services Reports on the National Grid website.

http://www2.nationalgrid.com/UK/Industry-information/Electricity-transmission-operational-data/Data-explorer/Outcome-Energy-Services/Procurement-Guidelines-PGBT-Offer-Details/

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.

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" which are 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).

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

http://www2.nationalgrid.com/UK/Industry-information/Electricity-transmission-operational-data/Report-explorer/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:

Licence Assurance Manager

E-mail: BM.liaisonandcompliance@nationalgrid.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 current version of the BPS (version 11.0) was issued on 1 April 2013. 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.

http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Balancing-framework/Transmission-license-C16-statements/

For further enquiries relating to the BPS, please contact:

Head of Commercial Frameworks—Electricity
National Grid Electricity Transmission plc
National Grid House
Warwick Technology Park
Gallows Hill
Warwick CV34 6DA

Email address
BalancingServices@nationalgrid.com

Appendix 2 - Emergency Instructions

10th October 2013 - Fairburn Wind Farm (FRBRW-1)
An issue was identified where the ability to control flows on the circuit on the SHETL system as the parallel circuit was on outage. This resulted in a localised NRAPM being issued and EI to Fairburn wind farm as this appeared to be the only controllable option to manage the overload.
Fairburn windfarm is a non BM Participant.

Two other NRAPM warning were issued

- 12/08/2014: Localised NRPAM issued over the Tuesday minimum, for the Scottish Export due to high levels of wind generation. The planning stage identified that the ENCC would need to take around 1GW of bids on wind farms in Scotland. GB and Scottish demand was approximately 700MW and 500MW respectively lower than forecast when became evident that non BM participants may need to be instructed down via Emergency Instruction. By 04:00 the wind and cascade hydro unit output had allowed a modest amount of downward margin to be regained within Scotland, and by 05:330 the decision was taken to cancel the warning at 06:00

- 17/08/2014: Localised NRAPM issued over the early Sunday minimum for the Scottish Export, due to high levels of wind generation. The planning stages identified that approximately 17.GW of wind bids would be required. At 01:15 a localised NRAPM for Scotland, with the real potential that in the remaining hours of the minimum the ENCC would need to issue emergency instructions to Non BM participants as all other options had been exhausted. In the event, this was not necessary. By 07:00 the demand in Scotland had started to increase and with BM options available the localised NRPAM was cancelled.

Appendix 3 - Involuntary Reductions

4th October 2013 - Walney Offshore Windfarm (WLNYO-2))

National Grid performs the role of System Operator for the connection between DONG Energy's Walney 2 Offshore Windfarm and Electricity North West's (ENW) Stanah 132kV substation. ENW required Walney 2 to be shut down for a short period to enable switching at Stanah 132kV substation. The generator refused to redeclare its MEL to zero and shut down when requested by ENCC. Further liaison with ENW and DONG took place but agreement could not be reached. At 21:44hrs ENW opened circuit breaker 505 under an emergency procedure, disconnecting Walney 2 from the Grid and causing the windfarm to shut down with the loss of 90MW generation. Restoration of the connection commenced on completion of ENW switching at 21:59hrs. The windfarm was reconnected to the system at 22:26hrs.

6th December 2013 - (WBUPS-2, WBUPS-3, WBUPS- 4, WBURB-1, WBURB-3, WBUPS-1 Disconnected)

Following on from a spurious opening of a circuit breaker at West Burton 132kV substation at 16:22, caused West Burton A Power station to reduce load by 540 MW and Gen 1 was taken off load with West Burton B reducing load shortly afterwards. Approximately 1400MW was lost in generation in total.

3rd March 2014 - South Humber Bank (SHBA-1)

The Control Room sent offers to South Humber Bank Unit 1 (SHBA-1) to advance the synchronisation time to settlement period 16. However, at the time there was a 1 minute PN at 08:30, and only a bid volume of 1MW for that half hour. These offers thus became deemed bids settled at £0/MWh.

Appendix 4 Review opinion by PricewaterhouseCoopers

Private & Confidential

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

11 December 2014

Our ref: DJG

Dear Sirs

Report on compliance with the Balancing Principles Statement for the year ended 30 September 2014 ("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 2014. We have undertaken this review in accordance with the Form of Agreement 4538/03/SW agreed between ourselves and National Grid Company Plc on 8 March 2004, which was subject to Amendment Number 3 which was agreed on 7 August 2008 and Amendment Number 4 which was agreed on 30 September 2011.

2 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 with there being versions as follows:

- Version 11.0 dated 1 April 2013; and
- Version 12.0 dated 1 January 2014.

Respective responsibilities of NGET and Balancing Principles Statement Auditor

3 NGET is responsible for taking all reasonable steps to ensure its compliance with the BPS, in respect of its use of Balancing Services. 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 any non-compliances with the BPS, which in aggregate we consider material,

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Appendix 4 Review opinion by PricewaterhouseCoopers

have come to our attention which would make us believe that NGET has not complied with the BPS, in respect of Balancing Services.

Basis of review and scope of work

4 We have performed the engagement in line with the requirements of the International Standard on Assurance Engagement 3000, which provides guidance on 'Assurance engagements other than audits or reviews of historical financial information'.

5 We have planned and performed our review in accordance with our review approach dated 24 July 2014, 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 2014" ("the Supplement") which we have sent to both NGET and the Office of Gas and Electricity Markets ("Ofgem").

6 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.

7 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.

Conclusion

8 Based on our review, nothing has come to our attention that causes us to believe that, for the Year, NGET did not in all material respects procure and use the various aspects of Balancing Services covered by this review, as described in the Supplement, in accordance with the BPS.

Use of this report

9 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.

10 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

Appendix 4 Review opinion by PricewaterhouseCoopers

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.

11 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.

Yours faithfully

David Gandee
PricewaterhouseCoopers LLP, Reading
Chartered Accountants and Registered Auditors