Public

Balancing Services Adjustment Data Methodology Statement

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Version Control

Date	Version No.	Notes
20.3.01	1.0	Initial version
10.4.01	1.1	Revision to include price adjusters for reserve option fees
24.9.01	1.2	Revision to incorporate implementation of P8 and P18 within the BSC. Effective in respect of Settlement Days from and including 25 September 2001
28.3.02	2.0	Revision to incorporate implementation of P48 within the BSC. Effective in respect of Settlement Days from and including 2 April 2002.
25.3.03	2.1	Revision to incorporate implementation of P74/P78 within the BSC. Effective in respect of Settlement Days from and including [Date to be coincident with P74/P78 Implementation]
24.10.03	3.0	Revision to amend the allocation of standing reserve option fees
28.11.03	3.1	Revision to incorporate changes associated with Maximum Generation Service.

Date	Version No.	Notes
01.01.05	3.2	Revisions to incorporate changes relating to BETTA
15.07.05	3.3	Revisions to incorporate changes as a result of CAP076: Treatment of System to Generating Intertripping Schemes
01.11.06	4.0	Revisions to incorporate changes as a result of BM Start-Up service
22.01.07	4.1	Revisions to update the Standing Reserve Weighting Factors and to clarify the treatment of Supplemental Standing Reserve in the BPA calculation
01.04.07	4.2	Revisions to incorporate Short Term Operating Reserve (STOR) and to publish STOR weighting factors on National Grid's industry information website
05.11.09	5.0	Revisions to incorporate changes as a result of P217A: Revised Tagging Process and Calculation of Cash Out, Cap144: Emergency Instruction to emergency de-energise, and to incorporate Commercial Intertrip volumes
01.04.11	6.0	Revision following annual review

Date	Version No.	Notes
01.04.13	7.0	Revision following annual review
01.01.14	8.0	Revision to incorporate Demand Side Balancing Reserve and Supplemental Balancing Reserve
01.04.14	9.0	Revision following annual review
01.04.15	10.0	Revision to provide clarification on process to include BM Start-Up in the BPA as part of annual review
05.11.15	11.0	Revisions: to allow Non-BM STOR actions to feed into the cash-out calculation; to remove STOR option fees from the BPA calculation; and to allow SBR and DSBR actions to feed into the cash-out calculation.
05.11.15	12.0	Revision to incorporate treatment of scenario where SBR units have a SEL equal to their MEL
01.04.16	13.0	Revision following annual review
01.04.17	14.0	Revision to remove Demand Side Balancing Reserve
1.04.18	15.0	Revision following annual review
01.04.19	16.0	Revision following annual review

Date	Version No.	Notes
01.04.20	17.0	Revision following annual review
01.04.21	18.0	Revision following annual review
30.04.21	19.0	Revision to update the BSAD Methodology Statement to include the Optional Downward Flexibility Management ("ODFM") product into calculation of cashout
01.04.22	20.0	Revision following annual review
24.10.22	21.0	Revision following additional review to update the BSAD Methodology Statement for the 2022/23 Winter Contingency Services.
04.11.22	22.0	Revision following additional review to update the BSAD Methodology Statement for the Demand Flexibility Service.
01.04.23	23.0	Revision following annual review
01.04.24	24	Revision following annual review
01.04.25	25	Revision following additional review
23:00 02.09.25	26	Revision to reflect updates to response and reserve services and to update contact email addresses following NESO IT changes.
01.04.26	27	Revision following annual review

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~~Part A:~~1 ~~-~~Introduction

1.1 Foreword

This Statement has been developed by the National Energy System Operator (NESO) in consultation with industry and approved by the Authority in accordance with our Electricity System Operator (ESO) Licence. ~~developed in consultation with the Authority.~~ ~~-~~The Statement may only be modified in accordance with the processes set out in Standard Condition C9~~16~~ of the ~~Transmission Licence~~ NESO's ESO Licence.

~~.~~ ~~—~~Where we buy, sell or acquire any relevant balancing services of a kind or under a mechanism which is not covered by this Statement then we shall promptly seek to establish a revised Statement covering such balancing services and/or mechanisms in accordance with the relevant provisions of Standard Condition ~~C16~~ C9 of the NESO ESO ~~Transmission~~ Licence.

The Statement makes reference to a number of definitions contained in the Grid Code and Balancing and Settlement Code. In the event that any of the relevant provisions in the Grid Code or Balancing and Settlement Code are amended it may become necessary for us to

modify the Statement in order that it remains consistent with the GC, CUSC or BSC.

~~**In the event that it is necessary to modify this Statement in advance of issuing an updated version of this document, then this will be done by issuing an additional review to this Statement.**~~

In any event, where our statutory obligations and the provisions of the GC, CUSC and BSC are considered inconsistent with any part of this Statement, the relevant statutory obligation of GC, CUSC and BSC provision will take precedence.

Unless defined in this Statement, terms used herein shall have the same meanings given to them in the NESO ESO Licence, the GC, the CUSC and/or the BSC as the case may be.

The latest version of this document together with the previous versions of this document are available electronically from the NESO Website:

~~The latest version of this document is available, together with the relevant change marked version (if any), electronically from the National Energy System Operator Website:~~

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~~https://www.neso.energy/industry-information/codes/balancing-settlement-code-bsc/c9-~~

~~statements-and-consultations#Current-statements-and-guidelines~~

Alternatively, a copy may be requested from:

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~~PART A: INTRODUCTION~~

~~1~~ 1.2 Purpose of Document

This document sets out the Balancing Services Adjustment Data (BSAD) methodology which the National ~~–~~Energy System Operator Limited (NESO) is required to establish in accordance with Standard Condition C9 of ~~the Electricity System Operator Licence~~the NESO ESO Licence. The purpose of this Statement is to outline the process NESO takes to determine and provide the costs and volumes of the relevant balancing services which are to be taken into account under the BSC for the purposes of determining Imbalance Price(s).

~~set out the information on relevant balancing services that will be taken into account under the Balancing and Settlement Code for the purposes of determining Imbalance Price(s).~~

~~In the event that it is necessary to modify this Statement in advance of issuing an updated version of this document, then this will be done by issuing a supplement to this Statement.~~

~~This Statement has been developed in consultation with the Authority. The Statement may only be modified in accordance with the processes set out in Standard Condition C9 of the Electricity System Operator Licence. Where we buy, sell or acquire any relevant balancing services of a kind or under a mechanism which is not covered by this Statement, we shall promptly seek to establish a revised Statement covering such balancing services and/or mechanisms in accordance with the relevant provisions of Standard Condition C9 of the Electricity System Operator Licence.~~

~~The Statement makes reference to a number of definitions contained in the Grid Code and Balancing and Settlement Code. In the event that any of the relevant provisions in the Grid Code or Balancing and Settlement Code are amended it may become necessary for us to modify the Statement in order that it remains consistent with the Grid Code or Balancing and Settlement Code.~~

~~In any event, where our statutory obligations or the provisions of the Grid Code are considered inconsistent with any part of this Statement, the relevant statutory obligation and/or Grid Code provision will take precedence.~~

~~PART B:~~2. Balancing Services Adjustment Data (BSAD) Overview

~~PART B: BALANCING SERVICES ADJUSTMENT DATA ('BSAD')~~

2.1 BSAD variables

~~1 The Balancing Service Adjustment Data ('BSAD') variables~~

BSAD is used as part of the electricity imbalance price calculation specified in section T, paragraphs 4.4 of the BSC.

Section Q Paragraph 6.3.2 of the BSC specifies BSAD for each settlement period as:

> ~~The Balancing Service Adjustment Data ('BSAD') is used as part of the electricity imbalance price calculation specified in section T, paragraphs 4.4 of the Balancing and Settlement Code. Section Q Paragraph 6.3.2 of the Balancing and Settlement Code specifies the BSAD data for each settlement period as:~~

(a) The unique sequential number for each Balancing Services Adjustment Actions;

(b) for each such Balancing Services Adjustment Action;

i. the Balancing Services Adjustment Volume;

ii. the Balancing Service Adjustment Cost; and

iii. Whether the NETSO has classified such Balancing Services Adjustment Action as "SO Flagged"; and

iv. Whether the NETSO has classified such Balancing Services Adjustment Actions as "STOR Flagged";

v. The BSAD Party ID of the person providing the procured Balancing Services Adjustment Action

vi. The BSAD Asset ID (if applicable)

vii. Whether the Balancing Service was procured by the NETSO through a tender and

viii. The type of Balancing Service procured

(c) Buy Price Price Adjustment; and

(d) Sell Price Price Adjustment.

Note: Above NETSO entries refer to NESO.

2.2 Balancing services included within Balancing Service Adjustment Actions (BSAA)

~~(e)~~

~~2 Balancing Service Adjustment Actions~~

Balancing services are defined in the Procurement Guidelines which NESO is required to establish in accordance with Standard Condition C9 of the NESO ESO Licence.

The following balancing service actions will be provided through BSAD as a Balancing Service Adjustment Action (BSAA):

~~Any relevant balancing service actions, including the following, will be provided through BSAD as a Balancing Service Adjustment Action (BSAA):~~

- Non-BM Short Term Operating Reserve (STOR)
- Non-BM Fast Reserve
- Non-BM Quick Reserve
- Non-BM Slow Reserve
- MW Dispatch (MWD)
- Local Constraint Market (LCM)
- Electricity trades
- Interconnector trades (e.g. Constraints, Balancing, HFLF, Emergency Assistance, Emergency Instruction etc)

- System To Generator Operational/Commercial Intertrip (see note 1)
- Maximum Generation (see note 2)
- Emergency Deenergisation Instructions (see note 3)
- Demand Flexibility service (DFS) (see note 4)

~~Any relevant balancing service including non-BM Short Term Operating Reserve (STOR) actions, non-BM Fast Reserve actions, Non-BM Quick Reserve, Non-BM Slow Reserve MW Dispatch and Local Constraint Market (LCM) service, taken outside the Balancing Mechanism, will be provided through BSAD as a Balancing Service Adjustment Action.~~

~~For each balancing service provided as a Balancing Service Adjustment Action, the energy bought or sold in MWh and the cost paid for each service in £ will be included. Each Balancing Service Adjustment Action will also be accompanied by an identifier indicating whether the balancing service was used for system management reasons. The System Management Action Flagging methodology statement describes the process NGESO will use to identify whether Balancing Service Adjustment Actions were used for system management reasons.~~

~~2.1 Balancing services included within Balancing Service Adjustment Actions~~

~~Balancing services are defined in the Procurement Guidelines which NESO is required to establish in accordance with Standard Condition C9 of the Electricity System Operator Licence. The purpose of the Procurement Guidelines is to set out the kinds of balancing services which NESO may be interested in purchasing, together with the mechanisms by which NESO envisages purchasing such balancing services.~~

~~Balancing Service Adjustment Actions may include, but are not limited to, the following balancing services:~~

Expected Energy Volume, is the energy a service provider is expected to deliver based on the applicable service terms.

Note 1: For System-to-Generator Operational/Commercial Intertrip service the volume for inclusion in BSAD will be calculated as the expected energy volume and will be equal to the reduction in output calculated from the time of the intertrip firing until the end of the BM Window Period. However, this service is not paid on a £/MWh basis and therefore the volume will be unpriced.

Note 2: NESO will estimate volume and associated cost of the Maximum Generation service and will include this estimate in a re-submission of BSAD to the Settlement Administration Agent (SAA).

Note 3: The volume for inclusion of Emergency Deenergisation Instructions in BSAD will be calculated as the expected energy volumes up to the end of the BM Window Period. However, as payment for such actions are administered through the CUSC and are consequently not open to the 'pay as bid' approach of the BM, such actions will be treated as an unpriced.

Note 4: Accepted bid volumes and prices for the real DFS events will be assessed under the System Management Action Flagging (SMAF) methodology to determine whether they are energy or system flagged. The volume that is anticipated to be delivered under DFS test runs will be system flagged.

For each balancing service provided as a BSAA, the expected energy volume will be included along with the cost in £, unless the BSAA is unpriced as mentioned in the notes (1-3) above.

In addition, each BSAA will also be accompanied by an identifier indicating whether the balancing service was used for system or energy management reasons. The SMAF methodology statement

describes the process NESO will use to identify whether BSAA were used for system or energy management reasons.

~~**Forward Contracts**~~

~~The costs and volumes of the following balancing services will be included as Balancing Service Adjustment Actions:~~

- ~~energy related products~~
- ~~system-to-system services (including services via Interconnectors, Constraint Management & Balancing service and Emergency Assistance service)~~

~~All system-to-system services will be included within BSAD as individual Balancing Service Adjustment Actions, except in circumstances where multiple system-to-system actions, initiated by the same party are taken within a particular settlement period on a particular interconnector from a particular service. In such cases, these services will be provided as a single Balancing Service Adjustment Action and consequently, the volume and cost of these services will be aggregated. This reflects the current contractual arrangements.~~

~~Below is an example of single aggregated situation. Note that this example is for illustration purposes only.~~

1. ~~NESO sells 50MWh in settlement period 10 over the French link at a price of £50/MWh from the Constraint Management & Balancing Service.~~
2. ~~NESO later buys 75MWh in settlement period 10 over the French link at a price of £60/MWh from the Constraint Management & Balancing Service.~~

~~The output from this example to the Balancing Service Adjustment Actions is as follows;~~

~~75MWh - 50MWh = 25MWh~~

~~The Balancing Service Adjustment Volume = 25MWh~~

~~25MWh * £60/MWh = £1500~~

~~The Balancing Service Adjustment Cost = £1500~~

~~Maximum Generation~~

~~This service is for a non-firm provision of energy, above generators Maximum Export Level (MEL), called upon after gate closure. Contracts for Maximum Generation are utilisation based only. NESO will estimate volume and associated cost of the~~

~~service and will include this estimate in a re-submission of BSAD to the Settlement Administration Agent (SAA) for use in the calculation of the Interim Information Settlement Run. Actual energy delivered, and the associated cost of provision, will not be known until BM Unit Metered Volume (QM_{ij}), as defined within the BSC, are available following the Interim Information Run. NESO will provide final volumes and costs associated with Maximum Generation Services as soon as practicable, but in any case prior to the Initial Settlement Run.~~

~~Emergency Deenergisation Instructions~~

~~In certain circumstances, it may be necessary for NESO to take Emergency Deenergisation Instructions. Such actions will be taken in accordance with Section 5.2 of the CUSC for the purpose of de-synchronising and de-energising Generating Unit(s). The volume for inclusion in BSAD will be calculated as the expected energy delivered up to the 'wall'[1].~~

~~However, as payment for such actions are administered through the CUSC and are consequently not open to the 'pay as bid' approach of the Balancing Mechanism, such actions will be treated as an unpriced.~~

[1] ~~The 'wall' means up to the end of the Balancing Mechanism Window Period~~

~~System-to-Generator Operational Intertripping~~

~~System-to-Generator Operational Intertripping service results, in certain circumstances, in the automatic tripping of Generating Unit(s). The contract details associated with a System-to-Generator Operational Intertripping Scheme are contained in section 4.2A of the CUSC and Appendix F3 of a generator's Bilateral Connection Agreement. The volume for inclusion in BSAD will be calculated as the expected energy delivered (SE_{sj}) in accordance with the methodology outlined within the ABSVD Methodology Statement, where service S is System-to-Generator Operational Intertripping. The volume for such balancing services will be included within BSAD as Balancing Service Adjustment Actions. However, this service is not paid on a £/MWh basis and therefore the volume will be unpriced.~~

~~Commercial Intertrip~~

~~The commercial intertrip service may, in certain circumstances, result in the automatic tripping of Generating Units(s). The volume for inclusion in BSAD will be calculated as the expected energy delivered up to the wall. However, the energy volume~~

provided through BSAD will be unpriced as the service is not contracted on a £/MWh basis.

Demand Flexibility Service

Demand Flexibility Services (DFS) will be included in the Balancing Service Adjustment Data (BSAD).

Accepted bid volume and prices for the reallive DFS events will be energy flagged and fed into cash out through BSAD.

The volume that is anticipated to be delivered under DFS test runs and/or for constraint purposes will be system flagged.

3 2.3 Price Adjusters

Price Adjusters are the part of BSAD to reflect option feeds for Balancing Services Contracts. Specifically, fees paid to facilitate additional MW capacity will be represented through the Buy Price Adjuster and fees paid to facilitate the withdrawal of MW capacity through the Sell Price Adjuster. Only one is used for each settlement period.

~~3~~ 2.3.1 Buy Price Adjuster (BPA)

The formula below illustrates how the costs associated with such option fees are converted into a £/MWh figure.

$$BPA_j = \Sigma(BC / cB)$$

(The j notation indicates the variable is directly related to the settlement period)

BC = cost of BM Start-Up instructions to minute t (£)

cB = volume capability of BM Start-Up instructions over the defined BPA period to minute t (MWh)

~~**BMStartUp Time = all minutes associated with BM StartUp instruction**~~

For the avoidance of doubt, if the denominator of BPA is zero in any settlement period, then BPA will be set to zero in that period.

~~3.1.~~ 2.3.2 Balancing services included within the ~~Buy Price Adjuster~~BPA

The ~~Buy Price Adjuster~~BPA may include, but is not limited to, ~~the following balancing services:~~BM Start Up service.

~~**BM Start-Up**~~

~~The BM Start-Up service allows NESO to access energy from BM Units that would not otherwise have run and are unable to start-up within BM timescales on the day. Firm payments for this service are made on a £/h basis, to remunerate the costs of preparing a BMU to start up and synchronise within BM timescales.~~

The costs incurred in creating additional reserve availability will feed into the calculation of BPA~~,~~ and will be allocated into the periods where the requirement exists (based on periodically reviewed windows).

~~-~~As NESO's reserve requirements vary with lead-time, the accrual of costs will need to take account of the amount of reserve that these costs are being incurred to meet, at the relevant lead-time.

For the avoidance of doubt, the costs will not feed into the BPA calculation in circumstances where NESO uses BM Start-Up services for system management reasons (as defined within the ~~System Management Action Flagging~~SMAF Methodology Statement).

2.3.3 Worked Example – BPA

~~3.1.2 Worked Example – Buy Price Adjuster~~

This example shows how options fees paid by NESO for balancing services are reflected within the ~~Buy Price Adjuster~~BPA.

Details of the warming dispatch (for each unit) will be found in the Sonar report.

BM Start-Up BPA calculation:

~~**This example is illustrative only, for the purposes of demonstrating how BPA is calculated.**~~

~~**The example;**~~

- ~~**BM Start-Up**~~

  BM Start-Up ~~cost~~ price = £2000 / hr

  Period unit is warmed = 8hrs (see note 5)

  BC = £2000 * 8hrs

  BC = £16000

  Generator capacity = 250MW

Requirement period = 4hrs (see note 6)

cB = 250MW * 4hrs

cB = 1000MWh

$$BPA_j = \Sigma(\mathrm{BC} \,/\, \mathrm{cB})$$

$$BPA_j = \sum \frac{£16000}{1000\mathrm{MWh}}$$

$$BPA_j = £16/MWh$$

Note 5: From the Warming Start and End instructions, derive how many minutes within those SPs, the warming is active:

Warming Start Time = HTSS+Ts-NDZ

Warming End Time = HTSS

Where, HTSS = Earliest synch time (SONAR report) – Ts (contracted - notice to synch time while on Hot Stand By); and Notice to Deviate from Zero (NDZ) being the notification time required for a BM Unit to start importing/exporting energy, from a zero Physical Notification.

Note 6: The cost is then allocated to each settlement period within the requirement window in which the system is short. The requirement window (period) is defined by BPA Start Period and BPA End Period values found in SONAR report.

~~3.2~~ 2.3.4 Sell Price Adjuster (SPA)

The formula below illustrates how the costs associated with such option fees are converted into a £/MWh figure.

$$SPA_j = \frac{(\sum NC_j + \sum FC_j)}{(cN_j + cF_j)]}$$

NC_j = cost of negative reserve option fees (£)

FC_j = cost of purchases of Forward Contract option fees (£)

cN_j = capability of negative reserve (MWh)

cF_j = capability of Forward contracts (MWh)

For the avoidance of doubt, if the denominator of SPA is zero in any settlement period, then SPA will be set to zero in that period.

Note: Currently, there are no balancing services that feed into SPA calculation.

~~PART C:~~3 -Balancing Services Adjustment Data (BSAD) Submission

~~PART C: BSAD Submission~~

~~1~~ 3.1 BSAD Provision

BSAD will be submitted in accordance with section Q, Paragraph 6.3 of the Balancing and Settlement Code. ~~—~~In outline this entails the preliminary submission of BSAD to Elexon ~~the Balancing Mechanism Reporting Agent (BMRA)~~ at or before 5pm each day to cover the 24 hour period from half-hour ending 00:30 to half-hour ending 24:00 for the following day. ~~BSAD amendments for previous periods will also be included in the submission.~~ BSAD amendments for previous preliminary submission will be included in the half-hourly submissions (as soon as possible after Gate Closure) and the (potential) updates of the half-hourly submissions will be included in the next day final submissions.

BSAD will be submitted on a reasonable endeavours basis to Elexon to be published on the in Adjustment actions (DISBSAD) | Insights Solution and Adjustment data (NETBSAD) | Insights Solution.

In the event that for a settlement day, BSAD data for a settlement period is not available, the previous submitted data for that settlement period will prevail. For example, in the event that the half hourly data for a settlement period is not available, then the day ahead submission will prevail.

BSAD will also be published on the NESO Data Portal on Data search | National Energy System Operator , and NESO Extranet on BSAD.

~~This initial submission of BSAD to the BMRA will include the Balancing Service Adjustment Actions, BPA and SPA for each settlement period.~~

~~The costs and volumes of, DFS, System-to-System services, Maximum Generation services, Emergency Deenergisation Instructions, System-to-Generator Operational Intertrips and Commercial Intertrips will be included in a post event re-submission(s) of BSAD as described in section 3.~~

~~BSAD will also be submitted on a reasonable endeavours basis to the BMRA on a half hourly basis as soon as possible after Gate Closure. In the event that the half hourly data is not available, then the day ahead submission will prevail.~~

3.2 Re-submission of BSAD

~~**2 Re-submission of BSAD**~~

~~The BSAD will be re-submitted, if required, post event to cover:~~

- ~~The correction of any errors in the original submission made at 5pm at the Day Ahead stage;~~
- ~~Adjustments to any of the variables to account for any forward contracts entered into between the day ahead and real time that were not included in the original submission;~~
- ~~Inclusion of any System-to-System services;~~
- ~~Inclusion of any Maximum Generation Service volumes and payments;~~
- ~~Inclusion of any Emergency Deenergisation Instruction volumes; and~~
- ~~Inclusion of any System-to-Generator Operational Intertripping volumes; and~~
- ~~Inclusion of any Commercial intertrip volumes.~~

~~Any of these circumstances could result in revisions to any of the variables within BSAD and hence SBPF and SSP.~~

~~If re-submission of BSAD is required, for any of the reasons above, then NESO will endeavour to do this in sufficient time to allow the~~

~~revised variables to be included in the calculation of SSP and SBP in the Interim Information Settlement Run.~~

After the (next day) final data submission, any required updates of BSAD data for a settlement day will be reflected in the resubmission(s) of BSAD at any time prior to the Final Reconciliation Settlement Run for such settlement day, as described in BSC, Section Q, 6.3.3.

Note: The costs and volumes of those services outlined in the notes 1 to 4, specifically, DFS, Maximum Generation service, Emergency Deenergisation Instructions, System-to-Generator Operational/Commercial Intertrips are only included in post event re-submission(s) of BSAD, as soon as relevant data is available.

If re-submission of BSAD is required, NESO will endeavour to do this as soon as reasonably practicable, to allow the revised variables to be included in the calculation of System Buy Price (SBP) and System Sell Price (SSP).

Any queries related to the calculation and submission of BSAD should be addressed to settlement.queries@neso.energy.