

Explanation of BSC's black start compensation and imbalance rules

Date	24 August 2022	Classification	Public
Document owner	Kathryn Coffin, Design Authority	Document version	V1.0

Purpose of this note

This note discharges an action on Elexon, from the [GC0156](#) Markets and Funding Mechanisms Subgroup, to explain how the BSC calculates imbalance settlement during a black start.

To give context to the answer, it explains how the BSC's market suspension and compensation arrangements work during a black start, how they interact with the rules in the Grid Code and the Connection and Use of System Code (CUSC), and how they interact with imbalance charges.

When does the BSC suspend or continue the market in a black start?

If there's a **Black Start** event under Operating Code (OC) 9 of the [Grid Code](#) (resulting in a **Black Start Period** under the BSC), then [BSC Section G3](#):

- Automatically suspends the market in a **Total Shutdown**, resulting in a **Market Suspension Period** that comprises all of the Settlement Periods within the Black Start Period.
- May suspend the market for some, all or none of the Settlement Periods in a **Partial Shutdown**, depending on if and when the BSC's **Market Suspension Threshold** is met during the Black Start Period. If the Market Suspension Threshold is met, then the Market Suspension Period will last from that Settlement Period onwards for the remaining duration of the Black Start Period.

The definitions of Total Shutdown, Partial Shutdown and Black Start are in OC9 of the Grid Code. In essence a Total Shutdown is where all generation has ceased across the Total System (as defined in the Grid Code), and a Partial Shutdown is where generation has ceased in part of the Total System and this shutdown part is islanded from the rest of the energised or 'healthy' system. Black Start is the system-restoration procedure, as set out in Grid Code OC9, for recovering from a Total Shutdown or Partial Shutdown.

The BSC Section G3 contingency provisions aren't triggered until/unless the NETSO¹ notifies Grid Code Users that, under Grid Code OC9, a Total Shutdown or Partial Shutdown has occurred and that the NETSO intends to implement a Black Start. It's also the NETSO that monitors the Market Suspension Threshold under the BSC during a Partial Shutdown and who notifies Elexon if it's met. The definitions of Black Start Period, Market Suspension Threshold and Market Suspension Period are all in BSC Section G3.

What happens for Settlement Periods that fall within a Market Suspension Period?

Normal BSC market operations are suspended, including the Balancing Mechanism/TERRE market, credit/contract positions and normal imbalance pricing. A special **Contingency Imbalance Price**, derived from historic data and set by the BSC Panel, applies to all BM Units' Metered Volumes.

All generators will be despatched by the NETSO for the duration of the Market Suspension Period. All instructions given by the NETSO to Grid Code Users during the Market Suspension Period will represent **black start instructions** as defined in BSC Section G3.3.1C. They will also be deemed to be Emergency Instructions under the Grid Code (in accordance with OC9.4.7.4 and Balancing Code (BC) 2.9.2.2) unless the NETSO specifies otherwise.

¹ National Grid Electricity System Operator Limited.

All contract positions and energy indebtedness will be set to zero, meaning normal Energy Contract Volume Notifications (ECVNs) and Metered Volume Reallocation Notifications (MVRNs) are suspended/nullified. All BM Units with positive (export) Metered Volumes will therefore have a 'long' imbalance position and will be paid the Contingency Imbalance Price for their output. All BM Units with negative (import) Metered Volumes will have a 'short' imbalance position and will pay the Contingency Imbalance Price for their consumption. This is the case regardless of whether or not they receive a specific black start instruction.

The Lead Party of any BM Unit which is given a black start instruction by the NETSO during the Black Start Period will be eligible to submit a claim for a **black start compensation amount** under the BSC. This is the case regardless of whether or not the BM Unit relates to a Black Start Station as defined in the Grid Code.

The Lead Party's black start compensation amount is determined as its **Avoidable Costs** minus the imbalance charges received (or the reduction in the imbalance charges paid) for its **black start compensation volume**. Its black start compensation volume is the net change in the BM Unit's Exports or Imports resulting from the Lead Party's compliance with the black start instruction given by the NETSO. The BSC's calculation for determining the amount of imbalance charges to deduct from the Lead Party's Avoidable Costs is based on the Contingency Imbalance Price.

The Lead Party's Avoidable Costs are determined by the BSC Panel. They represent the amount of net costs of operating the BM Unit which would not have been incurred but for the black start instruction. Costs are not counted unless they are directly incurred in the operation of the Plant and Apparatus comprised in the relevant BM Unit.

The terms 'black start instruction', 'black start compensation amount' and 'black start compensation volume' are all defined in BSC Section G3. BSC Section G2 sets out what is included in, and excluded from, Avoidable Costs. [BSC Section T1.7](#) describes the determination of the Contingency Imbalance Price and the definition of Contingency Imbalance Price is in [BSC Procedure \(BSCP\) 201](#).

What happens for Settlement Periods that don't fall within a Market Suspension Period?

All normal BSC market operations will continue, including the Balancing Mechanism/TERRE market, ECVNs/MVRNs, normal credit and contract positions, and the normal imbalance pricing calculations.

The NETSO will be using a combination of Emergency Instructions and normal Bid Offer Acceptances (BOAs) to balance the system.

Only those instructions given by the NETSO in accordance with Grid Code BC2.9.1.2(e)(i) (the need to invoke the Black Start process or the Re-Synchronisation of De-Synchronised Island process under OC9) will represent black start instructions as defined in BSC Section G3.3.1C and Grid Code BC2.9.2.6. These will be Emergency Instructions under BC2.9.2 and, in accordance with BC2.9.2.3, will not be treated as BOAs. The Lead Party of any BM Unit which is given a black start instruction by the NETSO under BC2.9.1.2(e)(i) will be eligible to submit a claim for a black start compensation amount under the BSC.

The following instructions from the NETSO will be deemed to be black start instructions as defined in BSC Section G3.3.1C. They will also be deemed to be Emergency Instructions under the Grid Code and will not be treated as BOAs (in accordance with OC9.4.7.4 and BC2.9.2):

- Any instructions to Black Start Stations and to Network Operators which are part of an invoked Local Joint Restoration Plan (unless the NETSO specifies otherwise); and
- In Scotland, any instructions to Gensets that are not at Black Start Stations, but which are part of an invoked Local Joint Restoration Plan and are instructed in accordance with the provisions of that Local Joint Restoration Plan.

The terms Black Start Station, Genset, Local Joint Restoration Plan and Network Operators are defined in the Grid Code Glossary & Definitions.

The NETSO may give other types of Emergency Instructions to other Grid Code Users. In accordance with Grid Code OC9.4.7.4, these will be considered to be Emergency Instructions under Balancing Code (BC) 2.9.1.2(e)(i) (and therefore black start instructions under BSC G3.3.1C) if the requirements of BC2.9.2.2 are met. If they are not issued under Grid Code BC2.9.1.2(e)(i), they will not represent black start instructions and the normal Grid Code, BSC and CUSC provisions for those Emergency Instructions will apply.

Examples of Emergency Instructions that aren't considered black start instructions and so aren't eligible for BSC compensation include:

- Maximum Generation Instructions (which aren't treated as BOAs under Grid Code BC2.9.2.3, and which receive Maximum Generation Energy Payments under Grid Code BC2.9.2.4 and [CUSC](#) Section 4.2); and
- Emergency Deenergisation Instructions (which aren't treated as BOAs under Grid Code BC2.9.2.3, and which receive Interruption Payments for loss of transmission access under Grid Code BC2.9.2.5 and CUSC Sections 5.2 and 5.10).

The NETSO will also continue to issue normal BOAs and activate Replacement Reserve bids. These will not represent black start instructions, and normal Grid Code and BSC provisions will apply.

The only balancing actions that are eligible for BSC black start compensation are therefore those which are not treated as BOAs or Replacement Reserve bids, and are not eligible for other existing forms of compensation/payment.

The Lead Party's black start compensation amount is still determined as its Avoidable Costs minus its imbalance charges received (or the reduction in its imbalance charges paid) as a result of complying with the black start instruction given by the NETSO. The BSC's calculation for determining the amount of imbalance charges to deduct from the Lead Party's Avoidable Costs will be based on the relevant imbalance price (as calculated under the normal imbalance pricing rules).

Where there's an MVRN in place, the BSC's compensation calculation also takes account of the imbalance charges incurred/paid by both the Lead Party and Subsidiary Party(ies) to that MVRN, and is based on the relevant imbalance price and the Parties' contract positions. The compensation is claimed by the Lead Party and any redistribution of funds between the Lead Party and Subsidiary Party(ies) is outside the BSC arrangements.

How does BSC Section G interact with the Capacity Market Rules?

Under the Capacity Market (CM) Rules, Capacity Providers are required to deliver their Adjusted Load Following Capacity Obligation (ALFCO) during a System Stress Event and receive penalties if they do not.

The BSC's [Issue 100](#) Workgroup has asked whether, under the CM Rules, a Capacity Provider would still incur penalties if a black start event means that they can't fulfil their CM obligation to provide ALFCO.

Elexon's initial view is that they would not incur penalties in this scenario, for the reasons given below. This is based on our reading of the [July 2021 consolidated CM Rules](#). We're currently seeking to confirm this interpretation of the CM Rules with EMR Settlement Limited (EMRS) and NGENSO as the EMR Delivery Body.

Section 8.5.1 of the CM Rules states that a Capacity Provider's obligation to deliver its ALFCO does not apply:

- In any Settlement Period in which it's affected by a suspension under BSC Section G.
 - Elexon's initial interpretation is that this means any Settlement Period during a Black Start Period in which the market is suspended under BSC Section G3 (i.e. any Total Shutdown or any part of a Partial Shutdown in which there's a Market Suspension Period).
- In any Settlement Period in which it's affected by a 'relevant interruption' under Section 5.10 of the CUSC, plus in the eight following Settlement Periods.
 - Elexon's initial interpretation is this includes any Settlement Period during a Black Start Period in which the market isn't suspended under BSC Section G3. Relevant Interruptions as defined in CUSC Section 11 are eligible for CUSC Interruption Payments. They exclude any Black Start event (Total Shutdown or any part of a Partial Shutdown) in which the market is suspended (i.e. in which there's a Market Suspension Period) but include any part of a Partial Shutdown in which the market continues.

Where to find more info:

[BSCP201](#) explains the BSC's black start process and terminology in detail, including diagrams and step tables.