
Results of actions from Issue 100 Workgroup meeting 1

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Purpose of this note

This note to the BSC [Issue 100](#) Workgroup discharges the following actions taken away from its [first meeting](#) on 24 June 2022:

- 1) Is a 'brown out' considered a Black Start?
- 2) What are the market scenarios that link to Total/Partial Shutdown?
- 3) Can the scope of Issue 100 cover ensuring that all balancing actions (particularly provision of Demand Side Response) are utilised before resorting to a Black Start?
- 4) Can Elexon circulate its high-level Black Start end-to-end process paper, presented to the March BSC Panel meeting?
- 5) Do the current BSC compensation arrangements allow for interim payments?
- 6) To what extent have the system restoration rules considered the Capacity Market (CM) penalty arrangements?

Elexon has given its views on all of these actions. Where the original action was on the NETSO,¹ we've also included the NETSO's views where provided to us. Our views are based on our understanding of the [existing](#) rules as set out in the relevant Industry Codes.

This note also shares Elexon's understanding of how the progress of Grid Code Modification [GC0156](#),² and the GC0156 Markets and Funding Mechanisms Subgroup, affect Issue 100 and any consequential BSC Modification Proposal.

Finally, to help with any BSC Modification Proposal, this note gives Elexon's initial thoughts on the key questions that a BSC Modification Workgroup would need to consider if introducing BSC black start compensation for non-BSC Parties.

Original scope of Issue 100

The NETSO raised [Issue 100](#) 'Assessing BSC Black Start processes to support NGENSO's [Distributed ReStart](#) project' in April 2022. The original purpose of Issue 100 was to consider whether the BSC should be amended to allow providers of new Distribution Restoration services to claim BSC black start compensation. The reasons given for this, and discussed at the first Issue 100 meeting, were as follows:

- The BSC's existing black start compensation applies to any BSC Party who is the Lead Party for a BM Unit that's given a black start instruction by the NETSO under the Grid Code. When the existing rules were written, the expectation was that it would be transmission-connected generators who receive the relevant Grid Code black start instructions and therefore claim the BSC compensation. The expectation was also that these generators would be BSC Parties.

¹ National Electricity Transmission System Operator, defined in the BSC as National Grid Electricity System Operator Limited (NGESO). This note uses the terms NETSO and NGENSO interchangeably.

² 'Facilitating the Implementation of the Electricity System Restoration Standard'.

- However, the Distributed Energy Resources (DERs) who will be providing Distribution Restoration services (e.g. solar, wind and hydro) will be connected to a Distribution System, registered within Suppliers' or Virtual Lead Parties' BM Units, and operated by non-BSC Parties.
- The BSC doesn't exclude Suppliers from claiming black start compensation as Lead Parties. But in the case of DERs, the Supplier wouldn't be the entity that's given the relevant instruction, operates the relevant asset, or incurs the relevant costs.
- The new Distribution Restoration services are expected to be used from 2025.

Issue 100 was originally intended to support progression of Grid Code Modification [GC0148](#),³ which the NETSO had raised in July 2020. However, in July 2022 the NETSO asked Elexon to put Issue 100 on hold, pending the outcome of the [GC0156](#) Markets and Funding Mechanisms Subgroup under the Grid Code. The NETSO:

- Raised GC0156 in February 2022 to comply with the new Electricity System Restoration Standard (ESRS) introduced by BEIS,⁴ and which is reflected in modifications made by Ofgem to the NETSO's Transmission Licence in October 2021. The date by which BEIS requires the NETSO to be compliant with the ESRS is 31 December 2026.
- Subsequently expanded the scope of GC0156 to include Distributed ReStart requirements, which were originally part of GC0148. The GC0148 Workgroup concluded in May 2022, after its own consultation and the NETSO's raising of Issue 100, that these would fit better within GC0156.
- Established the GC0156 Markets and Funding Mechanisms Subgroup in July 2022, to consider the holistic funding arrangements needed for all participants in the system restoration process. This subgroup held its final meeting on 11 October 2022. Its final report was published on 21 November 2022 as part of the [GC0156 Workgroup Consultation](#).

GC0156 and Funding Subgroup conclusions, and their implications for Issue 100

The GC0156 Markets and Funding Mechanisms Subgroup's recommendations differ from the original scope of Issue 100.

Elexon has initially identified the following key areas of BSC impact from GC0156. These are based on the subgroup's report and the Grid Code legal text included in the GC0156 Workgroup consultation:

- The subgroup recommends that the BSC's existing black start compensation for Avoidable Costs is expanded to include non-BSC Parties who have contracts with the NETSO to provide Anchor and Top Up Restoration Services (collectively 'Restoration Services') under the Grid Code, whether or not they are connected to:
 - The Transmission System, thereby providing Restoration Services through an invoked Local Joint Restoration Plan; or
 - A Distribution System, thereby providing Restoration Services through an invoked Distribution Restoration Zone Plan.⁵

Where these Restoration Service Providers are distribution-connected, Elexon is currently unclear from the draft Grid Code legal text whether any instructions they receive from Licensed Distribution System Operators (LDSOs) as part of an invoked Distribution Restoration Zone Plan will be considered to be NETSO instructions (Emergency Instructions) for Grid Code purposes under Balancing Code (BC) 2.9. If they are not, then neither BSC Parties nor non-Parties providing these services will be able to claim BSC black start compensation unless changes are made to the BSC.

- The subgroup does not recommend expanding the BSC's compensation to other non-contracted DERs, which was originally proposed by Issue 100. Therefore the original scope of Issue 100 is no longer relevant/required.
- GC0156 amends the Grid Code terminology from 'Black Start' to 'System Restoration', although the actual Grid Code definition of this as being the process for recovering from a Total or Partial Shutdown is otherwise unchanged. A consequence of this is that the BSC's references to 'Black Start' will also need to change to 'System Restoration' to align with the Grid Code.

³ 'Implementation of EU Emergency and Restoration Code Phase II'.

⁴ The Department for Business, Energy and Industrial Strategy.

⁵ Elexon's understanding of the GC0156 legal text is that Anchor Restoration Service Providers have the capability to start up from shutdown and energise a part of the system (either transmission or distribution), while Top Up Restoration Service Providers have the capability to start up from shutdown and synchronise to the system (either transmission or distribution). These terms appear to replace the previous Grid Code concepts of Black Start Service Provider and Black Start Capability.

- Aside from these terminology changes and the expansion of the BSC's compensation arrangements to non-BSC Parties, GC0156 does not propose any changes to the actual BSC Black Start processes for deciding whether and when to suspend and resume normal BSC market operations. It does propose changes to the Grid Code's system restoration process (e.g. by introducing Distribution Restoration Zones). However, with the exception of some high-level guidance in [BSC Procedure \(BSCP\) 201](#) on the end-to-end Black Start process under the Codes, which will need updating, the BSC isn't concerned with the details of the Grid Code restoration process.

The NETSO plans to raise a BSC Modification Proposal to progress the consequential BSC changes needed to support the above elements of GC0156. Although the likely scope of this BSC Modification Proposal has moved on from that proposed in Issue 100, for completeness this note still covers off the actions taken at the first Issue 100 meeting. To avoid confusion, and because the actions relate to clarifying the current rules, for the purposes of this note we've continued to use the existing Black Start terminology in the Grid Code and BSC.

Because of the BSC's cross-references to the relevant parts of the Grid Code and the knock-on effects of GC0156's proposed Black Start terminology changes, Elexon would need certainty of the Grid Code legal text for GC0156 before we could finalise our own legal text for any necessary BSC Modification Proposal. Changing terminology from 'Black Start' to 'System Restoration' would impact multiple BSC Sections, BSCPs and Elexon guidance notes.

For further background information, we've also attached a note that Elexon wrote for the GC0156 Markets and Funding Mechanisms Subgroup (Attachment 1). This explains how the BSC's existing market suspension and compensation arrangements work during a Black Start, how they interact with the existing rules in the Grid Code and the Connection and Use of System Code (CUSEC), and how they interact with BSC imbalance charges.

What is, and isn't, a Black Start? (Actions 1 & 2)

Elexon's view (confirmed by the NETSO) is that a 'brown out' **would not** meet the Grid Code's definition of a Black Start, and so would not trigger the Black Start processes under the Grid Code or the BSC. This is based on our understanding that 'brown out' means issues with system frequency or voltage, but no blackouts. 'Brown outs' are therefore outside the scope of Issue 100. The NETSO has advised Elexon that a 'brown out' scenario would generally result in demand reduction by reducing voltage levels.

The end-to-end Black Start process is set out in [Operating Code \(OC\) 9 of the Grid Code](#), [Section G3 of the BSC](#) and [BSC Procedure \(BSCP\) 201](#). The BSC's Black Start provisions are only triggered if the NETSO notifies Grid Code Users and Elexon under OC9 that either a Total Shutdown or a Partial Shutdown has occurred, and that it intends to implement a Black Start.

A Total or Partial Shutdown are the **only** scenarios that represent a Black Start under the Grid Code and BSC.

The relevant Grid Code definitions are:

'A "**Total Shutdown**" is the situation existing when all generation has ceased and there is no electricity supply from External Interconnections. Therefore, the Total System has shutdown with the result that it is not possible for the Total System to begin to function again without The Company's [the NETSO's] directions relating to a Black Start.' (Grid Code OC9.4.1A)

'A "**Partial Shutdown**" is the same as a Total Shutdown except that all generation has ceased in a separate part of the Total System and there is no electricity supply from External Interconnections or other parts of the Total System to that part of the Total System. Therefore, that part of the Total System is shutdown with the result that it is not possible for that part of the Total System to begin to function again without The Company's [the NETSO's] directions relating to a Black Start.' (Grid Code OC9.4.2A)

'The procedure necessary for a recovery from a Total Shutdown or Partial Shutdown is known as a "**Black Start**". The procedure for a Partial Shutdown is the same as that for a Total Shutdown except that it applies only to a part of the Total System. It should be remembered that a Partial Shutdown may affect parts of the Total System which are not themselves shutdown.' (OC9.4.7.1)

"**Total System**" means: The National Electricity Transmission System and all [Grid Code] User Systems in the National Electricity Transmission System Operator Area'. (Grid Code Glossary & Definitions).

Elexon notes that not all shutdowns or 'islanding' of part of the Total System necessarily meet the definition of a Partial Shutdown and thereby of a Black Start. This is because the Grid Code's definition of a Partial Shutdown contains the additional criterion that it's not possible for the affected part of the system to be re-energised without the NETSO issuing Black Start directions under the Grid Code. Since the BSC was introduced in 2001, there's never been a Total

Shutdown or a Partial Shutdown. The Assessment Report for [BSC Modification P276](#)⁶ contains examples of historic system events that didn't meet the Grid Code's Black Start definition.

What other actions would the NETSO take before resorting to a Black Start? (Action 3)

Elxon's view is that this is a question for the Grid Code, and therefore **outside the scope** of the BSC and Issue 100.

However, we understand from the NETSO that this was clarified as part of Grid Code Modification GC0144⁷ through provisions inserted into Grid Code [BC2.9.8](#).

Where is the high-level Black Start end-to-end process documented? (Action 4)

Elxon's March 2022 paper to the BSC Panel included summaries of the existing, external-facing, Black Start processes. These were based on the public descriptions in BSC Section G and BSCP201. BSCP201 contains a high-level summary of the end-to-end Black Start process and includes more detailed timeline diagrams and step tables. Elxon's [slides](#) for the first Issue 100 meeting also included end-to-end process flow diagrams.

Unfortunately the paper presented to the March BSC Panel meeting contained some other confidential information and so can't be shared.

Does the BSC currently allow for interim compensation claims/payments? (Action 5)

Elxon's view is that the BSC **does allow** interim claims and payments to be made for black start compensation.

Although BSC Section G3 contains a deadline by which all claims must be submitted, BSCP201 says that this doesn't apply to any claims submitted for interim payments during an ongoing Black Start Period. Only once the Black Start Period has ended does that deadline apply (i.e. for making final claims applications).

The black start compensation claim form contained in BSCP201 (form BSCP201/01) has a field to record whether the claimant is seeking interim payment. The guidance in BSCP201 clarifies that interim claims can only be for costs actually incurred up to the date of that claim, and that no interim payment can be made for costs which may (or will) be incurred at a future date.

Elxon and the BSC Panel may initially not be operational during a Black Start, depending on the nature of the event and the impact of the blackouts. Elxon and the Panel, or any Claims Committee established by the Panel, would aim to receive and process claims as soon as reasonably practicable.

Are Capacity Market providers penalised for failing to deliver during a Black Start? (Action 6)

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.

Elxon's view

Elxon's interpretation is that, under the CM Rules, a Capacity Provider **would not** incur penalties if a Black Start event means that they can't fulfil their CM obligation to provide ALFCO. This is based on our reading of the [July 2021 consolidated CM Rules](#) as set out below. We've confirmed this with the Low Carbon Contracts Company's (LCCC's) legal team.

Rule 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.
 - Elxon's 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).

⁶ 'Introduce an additional trigger/threshold for suspending the market in the event of a Partial Shutdown'.

⁷ 'Alignment of Market Suspension Rights to the EU Emergency and Restoration Code Article 35.1(b)'.

- 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 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.

See our attached note to the GC0156 Markets and Funding Mechanisms Subgroup (Attachment 1) for a more detailed explanation of when the BSC does and doesn't suspend the market, and how this interacts with the CUSC's Interruption Payments for loss of transmission access.

NETSO's view

The NETSO has also provided Elexon with its view that Capacity Providers **would not** be required to deliver their ALFCO during a Black Start event. The NETSO notes that the CM Rules define a System Stress Event as follows:

“System Stress Event” means a Settlement Period in which a System Operator Instigated Demand Control Event occurs where such event lasts at least 15 continuous minutes (whether the event falls within one Settlement Period or across more than one consecutive Settlement Periods, and where the event falls across multiple consecutive Settlement Periods, each of those Settlement Periods will be a “System Stress Event”).' (CM Rules, Rule 8.4.1).

“System Operator Instigated Demand Control Event” means where:

- a) the System Operator gives a Demand Reduction Instruction [under Grid Code OC6.5] and/or an Emergency Manual Disconnection Instruction [under Grid Code OC6.7] to one or more DNOs; and/or
- b) an Automatic Low Frequency Demand Disconnection [under Grid Code OC6.6] takes place,

except where one or more of the following applies:

- i. such action results from one or more faults in the GB Transmission System or a Distribution Network; or
- ii. the System Operator issues a Bid-Offer Acceptance(s) to reduce output or an Emergency Instruction(s) to reduce output to the extent that the Volume of that Bid-Offer Acceptance(s) or that Emergency Instruction(s) exceeds the Volume of the Demand Reduction Instruction and/or an Emergency Manual Disconnection Instruction issued or the Automatic Low Frequency Demand Disconnection that took place.
- iii. the action has an associated System Management Action Flag attached in accordance with Section Q6 (Submission of Data by the Transmission Company) of the BSC.' (CM Rules, Rule 8.4.2).

The NETSO's interpretation is that a Black Start would not represent a System Operator Instigated Demand Control Event, and would therefore not be a System Stress Event.

What would need considering if introducing BSC black start compensation for non-BSC Parties?

Who is eligible, why and for what costs?

Under the existing BSC compensation mechanism, to receive black start compensation the Lead Party of a BM Unit has to provide the BSC Panel (or, if established, the Panel's Claims Committee) with evidence:

- That it's received a black start instruction under BSC Section G3.3 (i.e. provide evidence that it's received a specific type of instruction from the NETSO under the Grid Code, during a Black Start, that the BSC defines as being a black start instruction).
- Of any changes (in MWh) in its BM Unit's Exports or Imports that resulted from its compliance with this black start instruction in each Settlement Period to which that instruction applied (i.e. as opposed to what it would otherwise have done had it not received that instruction).

- Of the Avoidable Costs (as defined in BSC Section G2) that it incurred as a result of complying with the black start instruction in each Settlement Period to which that instruction applied (e.g. fuel costs, Plant and Apparatus costs, or other operational costs) – these costs must be directly incurred as a result of operating the Plant and Apparatus in the BM Unit, and must also be reasonably and prudently incurred.

The Panel/Claims Committee may also ask the NETSO and/or LDSOs to provide information to help it in determining the claim.

Elexon anticipates that any BSC Modification Proposal to expand the BSC's black start compensation to non-BSC Party providers of contracted Black Start services would need to consider, among other things:

- What type(s) of 'black start instruction(s)' would trigger eligibility for a non-BSC Party to receive BSC compensation. The BSC's definition of 'black start instruction' could then point to the relevant types of instructions in the Grid Code (or other relevant Industry Code, e.g. the Distribution Code) as being eligible for non-Party claims.
- Whether simply pointing to the relevant Grid Code (or other Industry Code) instructions is sufficient to limit compensation to the intended non-Party recipients, or if further restrictions need to be placed in the BSC (these could be, for example, that the non-Party must be an Anchor or Top Up Restoration Service Provider as defined in the Grid Code).
- How the non-Party would evidence both that it received the eligible type of instruction, and that the costs for which it's seeking compensation only occurred as a result of complying with that instruction.
- Whether changes are needed to the BSC's definition of Avoidable Costs, for example if the relevant providers expend stored energy (e.g. batteries or hydro) rather than use fuel.
- How we'd ensure that, if the relevant asset is part of a Supplier's or Virtual Lead Party's BM Unit, there's no double-counting of costs for compensation purposes.

Understanding the type of instruction(s) that could be given to non-Parties, whether they differ from the existing types of black start instructions, and what types of impact they might have on a non-Party, would drive how the compensation eligibility criteria were then drafted into the BSC.

How does Elexon recoup the amount paid out for BSC black start compensation claims?

Where there are upheld BSC claims for black start compensation under BSC Section G3.3, each BSC Lead Party claimant is entitled to be paid its black start compensation amount by Elexon – plus compound interest for the period between complying with the black start instruction and receiving the compensation payment.

Elexon is not-for-profit, and has to balance to zero. So the amounts of compensation paid out are funded by all BSC Trading Parties (including the Lead Party claimant), according to their Black Start Reallocation Proportions.

The calculation of a Trading Party's Black Start Reallocation Proportion in BSC Section G3.3 is its market share of offtaking BM Units⁸ (i.e. its share is its offtaking Credited Energy Volumes, divided by the market's offtaking Credited Energy Volumes), calculated as the sum across all Settlement Periods in the 7 Settlement Days immediately preceding the Settlement Day on which the Black Start Period commenced. Delivering BM Units are excluded entirely, meaning that black start compensation payments are recovered from offtaking only.

Both the black start compensation amount payments and the Black Start Reallocation Proportions are considered to be Ad-Hoc Trading Charges (a type of Reconciliation Charge) that are paid/recouped by the Funds Administration Agent (FAA) under [BSC Section N6.9](#).

Non-Parties, since they aren't BSC signatories, don't pay BSC Trading Charges (or indeed contribute to any BSC/Elexon costs). Elexon anticipates that any BSC Modification Proposal to expand the BSC's black start compensation to non-BSC Party providers of contracted Black Start services would therefore need to consider whether claims payments to non-Parties are paid out and recouped via:

- The FAA as BSC Ad-Hoc Trading Charges (as currently happens with Party claims) – this would require FAA system changes and may be complex since non-Parties don't pay/receive Trading Charges; or
- Elexon as a different type of payment/BSCCo Charge – which would require Elexon finance system changes.

⁸ An offtaking BM Unit is a BM Unit that, in the relevant Settlement Period, is part of an offtaking Trading Unit. An offtaking Trading Unit is a Trading Unit for which, in the relevant Settlement Period, the sum of all its BM Unit Metered Volumes is less than or equal to zero.

Under either option, the amounts paid out to non-Parties would by default have to be recovered from BSC Parties. A Workgroup would need to consider if the recovery is from:

- Offtake only (as for current Party claims);
- All BSC Trading Parties;
- Some other subset of BSC Party; or
- Some other external source (e.g. by recharging the costs of upheld non-Party claims to the NETSO).

A Modification Workgroup could consider whether non-Party claimants could/should be charged a submission fee to cover Elexon's administration costs in processing their claims, although this would be different to contributing to the general recouping of claims payments.

Finally, the likely volume of non-Party claims (and the impacts of this) would need to be established as part of developing any potential solution.

How will implementation of the Grid Code and BSC changes be aligned?

A BSC Modification Workgroup will need to consider how to align implementation of the necessary BSC changes with GC0156.

A Workgroup will wish to ensure that the end-to-end Black Start process remains clear and effective across the Codes, and that the intended Parties and non-Parties are able to claim BSC compensation if a Black Start occurs.

Attachments

- Attachment 1 - Explanation of BSC's black start compensation and imbalance rules (note to GC0156 Markets and Funding Mechanisms Subgroup on 24 August 2022)