**PUBLIC**

# BSC Change Business Requirements

## 'Assessing the costs and benefits of adjusting parties' imbalances following a demand disconnection

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**V1.0**

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# 'ASSESSING THE COSTS AND BENEFITS OF ADJUSTING PARTIES' IMBALANCES FOLLOWING A DEMAND DISCONNECTION

## Document History

| Date | Version | Author | Reviewers | Description |
|---|---|---|---|---|
| 22/11/2019 | v0.1 | Assad Ijaz | Nick Rubin | Initial draft of DCE brake business requirements |
| 27/11/2019 | v0.2 | Assad Ijaz | Nick Rubin | Refined requirements following proposal and requirements review |
| 28/11/2019 | v0.3 | Assad Ijaz | Nick Rubin<br>Shamaila Jawaid | Further refined requirements and aligned wording to Modification Proposal following review. |
| 29/11/2019 | v0.4 | Assad Ijaz | Justin Andrews<br>Nick Rubin | Refined wording following internal review of document. |

## Approvals

| Date | Name | Role |
|---|---|---|
| 02/12/2019 | Justin Andrews | Head of Design Authority |

# 'ASSESSING THE COSTS AND BENEFITS OF ADJUSTING PARTIES' IMBALANCES FOLLOWING A DEMAND DISCONNECTION

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# 'ASSESSING THE COSTS AND BENEFITS OF ADJUSTING PARTIES' IMBALANCES FOLLOWING A DEMAND DISCONNECTION

## 1. INTRODUCTION

### 1.1 Purpose

The purpose of this document is to communicate the Business Requirements of BSC Modification Proposal - 'Assessing the costs and benefits of adjusting Parties' Imbalances following a demand disconnection'.

## 2. BSC CHANGE SUMMARY

### 2.1 BSC Change Problem Statement

Following a Demand Control Event (DCE) that results in demand disconnection and/or auto low frequency demand disconnection (but not voltage reduction), the BSC requires that Licensed Distribution System Operator (LDSOs), National Electricity Transmission System Operator (NETSO), certain Party Agents and BSC Agents, and Balancing and Settlement Code Company (BSCCo) follow certain processes (as introduced by Modification Proposal P305) to estimate the volumes of electricity that would have been imported or exported by disconnected customers. These volumes are BM Unit Allocated Demand Disconnection Volume (BMUADDV) and Period BM Unit Demand Disconnection Volume (QDD). BMUADDV and QDD are added into a parties calculation of imbalance volume as though they were applicable balancing services volume. These processes are also known as the DCE volume bottom up' processes.

The BSC Panel (the Panel) is concerned that the benefits of operating 'DCE volume bottom up' processes (calculating BMUADDV and QDD), may not always outweigh the costs. In particular, that certain demand disconnection DCEs may not always warrant BSC Parties, Party Agents, BSC Agents and BSCCo working together to estimate BMUADDV and QDD.

The Panel is aware that BSCCo plans to raise an Issue to consider its concerns once it has received preliminary lessons from estimating BMUADDV and QDD following the DCE on 9 August 2019, which resulted in the cumulative loss of 1,691MW of power from the grid. A comprehensive report on the event published by NGESO can be found here. The Panel believes that more urgent action is necessary in case there are further DCEs, in particular over the forthcoming winter and spring seasons, which may incur more costs than benefits for consumers.

A Modification Proposal is required which would introduce a mechanism for BSCCo to determine whether BSC Parties, Party Agents and Central Agents should carry out the 'bottom up' processes. The Modification Proposal should provide a straightforward and timely solution, which alleviates the Panel's immediate concerns.

### 2.2 Objectives and scope

- Introduce a mechanism for determining whether LDSOs, NETSO, certain Party Agents, BSC Agents and BSCCo should carry out the 'DCE volume bottom up' process following a DCE.
- Calculating the cost and benefit of running the bottom up process following a DCE.
- Notifying impacted BSC Parties on whether or not to run the bottom up processes.

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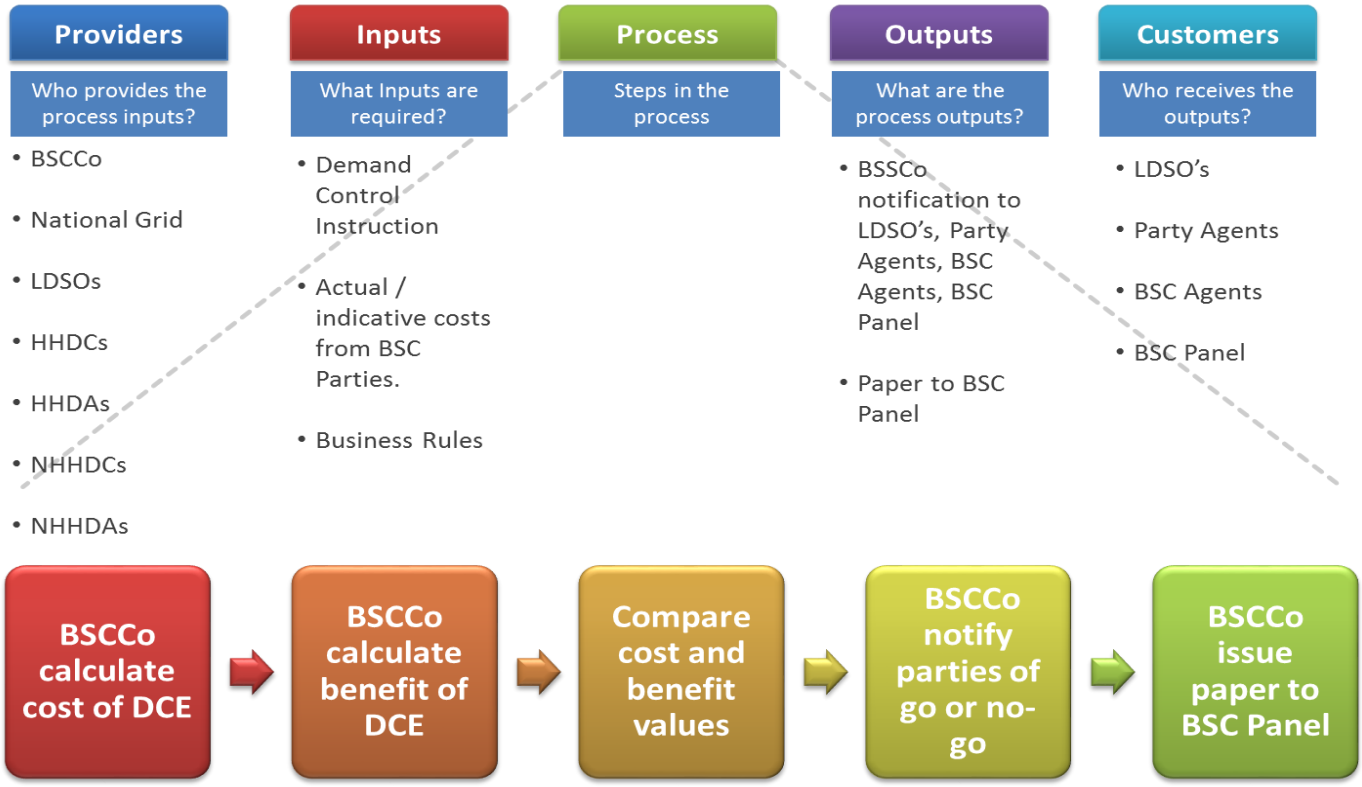
## 3. HIGH LEVEL PROCESS

The diagram below summarises the end to end proposed process for the Modification. The diagram highlights the required inputs, key steps in the process and the recipients of the outputs. It should be noted, that the diagram below does not include the process for the Panel establishing and maintaining Business Rules.



## 4. BUSINESS REQUIREMENTS

This section sets out the Business Requirements for the Modification Proposal.

### 4.1 References

For ease, we have generally referred to Parties, Party Agents and BSC Agents in these Business Requirements. However, only certain Parties and agents are actually affected:

- Party Agents = Non Half Hourly and Half Hourly data collectors and aggregators.
- BSC Agents = Central Data Collection Agent (CDCA)
- BSC Parties = LDSOs and NETSO.

### 4.2 Requirements

| Ref. no | Business Requirement |
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| **BR1** | **BSC Panel shall establish business rules**<br><br>Requirement Description<br><br>The BSC Panel shall establish business rules for the following elements:<br><br>a. The circumstances in which BSCCo should assess the costs and benefits of a DCE.<br><br>b. A method for assessing the costs and benefits of a DCE – including any specific calculations or parameters that BSCCo should follow or use in its assessment<br><br>c. Other criteria, parameters or calculations necessary to assess the DCE.<br><br>Upon implementation of this Modification Proposal, the Panel's Business Rules should reflect these Business Requirements, in particular BR 5-9. |
| **BR2** | **BSCCo Panel shall publish business rules**<br><br>Requirement Description<br><br>The business rules will be captured in a Category 3 Configurable Item and will be published on the BSC website . |
| **BR3** | **The BSC Panel will govern business rules**<br><br>Requirement Description |

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| | The BSC Panel (or any delegated authority) may review the business rules, including calculations and parameters therein, from time to time, for example at least after each DCE. The BSC Panel's review of the business rules shall include consultation with relevant BSC Parties. |
| **BR4** | **BSSCo to complete assessment within one working day after receiving required inputs.**<br><br>Requirement Description<br><br>The BSCCo shall complete activities explained in BR5, BR6, BR7, BR8 and BR9 (see below) within [one] working day after receiving the required inputs to conduct the assessment , in accordance with rules established by Panel. |
| **BR5** | **BSCCo shall determine the type of DCE**<br><br>Requirement Description<br><br>The BSCCo shall determine whether a DCE is a Demand Disconnection Event i.e. that the DCE is the subject of at least one Demand Control Instruction for either demand disconnection or auto low frequency demand disconnection.<br>The scenarios below state the variations of DCE's and how BSSCo will process them.<br><br>**Scenario 1**<br><br>• **Demand Control Instruction (DCI):** 1 DCI received<br>• **DCE Type:** Demand disconnection and/or auto low frequency demand disconnection<br>• **Outcome:** BSSCo will assess the costs and benefits for the DCE and notify parties. As per BR6, BR7, BR8 and BR9.<br><br>**Scenario 2**<br><br>• **Demand Control Instruction:** 2 Demand Control Instructions received<br>• **DCE Type:** Demand Disconnection and Voltage Reduction<br>• **Outcome:** BSSCo will assess the costs and benefits **only** for the **demand disconnection element** of the DCE and will notify parties. As per BR6, BR7, BR8 and BR9.<br><br>**Scenario 3**<br><br>• **Demand Control Instruction:** 1 Demand Control Instruction received<br>• **DCE Type:** Voltage Reduction<br>• **Outcome:** BSSCo will **not** assess the costs and benefits for the DCE and will notify parties as per BR9. |
| **BR6** | **BSCCo will calculate the cost of the bottom up processes.** |

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| | Requirement Description<br><br>The BSCCo will calculate the cost of the bottom up process following the occurrence of a DCE. The cost shall be calculated as;<br><br>$$DCE\_Cost = \frac{HHA\_Cost + LDSO\_Cost + NHHA\_Cost_{Cost} + NETSO\_Cost + BSC\_Agent\_Cost + BSCCO\_Cost}{DDE\_Size_{total}}$$<br><br>As part of the initial implementation the $DCE\_Cost$ will be predetermined and set to *£75.13. This figure may be reviewed and adjusted from time to time by the panel (see BR3).<br><br>• *HHA_Cost (£)* – the expected costs by HHDCs and HHDAs to carry out 'bottom-up' processes for a historical or indicative DCE.<br>• *LDSO_Cost (£)* – the expected costs by LDSOs to carry out 'bottom-up' processes for a historical or indicative DCE.<br>• *BSC_Agent_Cost (£)* – the expected costs by BSC Agents to carry out 'bottom-up' processes for a historical or indicative DCE.<br>• *NHHA_Cost (£)* – the expected costs by NHHDCs and NHHDAs to carry out 'bottom-up' processes for a historical or indicative DCE.<br>• *NETSO_Cost* (£) - the expected costs for NETSO to carry out 'bottom-up' processes for a historical or indicative DCE.<br>• *BSCCo_Cost (£)* – the expected costs by BSCCo and Central Agents to carry out 'bottom-up' processes for a historical or indicative DCE.<br>• *DDE_Sizetotal (MWh)* – the volume of electricity anticipated to be disconnected as a consequence of demand disconnection or auto low frequency demand disconnection derived from a historical or indicative DCE.<br><br>* $DCE\_Cost$ has been predetermined using indicative costs attained from BSC Parties. Please see the Modification Proposal for more details. |
| **BR7** | **BSCCo will calculate the benefit of the bottom up processes.**<br><br>Requirement Description<br><br>The BSCCo will calculate the benefit of the bottom up process following the occurrence of a DCE. The cost shall be calculated as;<br><br>$$DCE\_Value = \frac{\sum_j (SP_j \times DDE\_Size_j)}{DDE\_Size_{total}}$$ |

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| | • $SP_j$ – is the System Price for a Settlement Period affected by demand disconnection or auto low frequency demand disconnection during the DCE.<br>• $DDE\_Size_j\ (MWh)$ – is the anticipated energy disconnected during a Settlement Period due to demand disconnection and derived from a DCI(s) sent by the NETSO to BSCCo for the DCE being assessed.<br>• $DDE\_Size_{total}\ (MWh)$ – is the total anticipated energy disconnected due to demand disconnection and derived from a DCI(s) sent by the NETSO to BSCCo for the DCE being assessed. |
| **BR8** | **BSCCo will compare the cost and benefit values**<br><br>Requirement Description<br><br>To determine if the bottom up process shall be run, the cost and benefit values shall be compared against the following criteria;<br><br>1. IF $DCE\_Cost \geq DCE\_Value$ = Bottom up process is **not** run<br><br>2. IF $DCE\_Value > DCE\_Cost$ = Bottom up process is run |
| **BR9** | **BSCCo to notify BSC Parties, Party Agents and Central Agents and Panel of outcome**<br><br>Requirement Description<br><br>The BSCCo shall notify BSC Parties, Party Agents, Central Agents and the Panel whether or not to run the bottom up process, within [one] working day after receiving the required inputs (as stated in the business rules) to conduct the assessment.<br><br>The BSCCo shall notify Category A Authorised persons (as identified per BSCP38) via email and shall also publish an ELEXON Circular and put a notice on the BSC website. |
| **BR10** | **Communicate outcome to the BSC Panel**<br><br>Requirement Description<br><br>The BSCCo shall present a paper to the BSC Panel, at the next available Panel meeting following the DCE. The paper shall summarise its assessment and explaining the notice it made to BSC Parties, Party Agents and Central Agents**.** |
| **BR11** | **LDSOs, Party Agents and BSC Agents shall only take action upon instruction from BSSCo.** |

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| | Requirement Description<br><br>LDSOs, Party Agents and BSC Agents shall run bottom up processes upon instruction from BSSCo i.e. parties shall wait until they receive a notification from BSSCo (in accordance with BR9) on whether or not to run the bottom up processes for the DCE in question. |

## 5. GLOSSARY

| Term | Meaning |
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# 'ASSESSING THE COSTS AND BENEFITS OF ADJUSTING PARTIES' IMBALANCES FOLLOWING A DEMAND DISCONNECTION

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| Demand Control Event (DCE) | A Demand Control Event is where National Grid Electricity System Operator (NGESO) is unable to call upon sufficient generation to meet the current demand, it can call upon Demand Control under Grid Code Section OC6 'Demand Control' as a last resort emergency instruction to manage the situation. This enables it to call upon Licensed Distribution System Operators (LDSOs) to reduce demand in their areas, either through initiating Voltage Reduction and/or disconnecting consumers through Demand Disconnection. |
| Demand Disconnection | Categorised as where LDSOs either manually disconnect demand from the grid (demand disconnection) or reduce the level of supply (voltage reduction). |
| Auto low Frequency Demand Disconnection (ALFDD) | ALFDD DCE is where all of the available "backup" power has already been deployed and the cumulative scale of generation loss means that the system frequency falls a level (< 49.0 Hz) where secondary backup systems act automatically to disconnect approximately 5% of demand. |
| Balancing Mechanism Reporting Agent (BMRA) | The BMRA collects and displays Balancing Mechanism and other data in near to real-time to interested parties (BMR Service Users). BMRA receives a range of information (historic, current and forecast) from the National Electricity System Operator (NGESO). |