ISG202/01 – NON-STANDARD BM UNIT APPLICATION FOR THE PEAK GEN POWER ENERGY STORAGE SCHEME

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Owner/author	Katie Wilkinson
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Summary	Peak Gen Power 2 Limited (PGP2) has applied for a non-standard BM Unit for its hybrid electricity generation and storage scheme at Peterborough. We invite the ISG to approve the application.

1. Background

1.1 PGP2 has constructed and is extending a 28MW diesel-battery hybrid electricity generation and storage scheme at a site located in Woodston, Peterborough. The hybrid electricity generation and storage scheme currently consists of 12 x 1.75MW diesel Generating Units (GU) giving 21MW of capacity and two power conversion systems ("inverters") connected to two battery storage units giving 4 MW capacity. Two more conversion systems and two battery storage units giving 3 MW of capacity are under construction, with a planned completion date in March 2018. The site is connected to the UKPN (Eastern Power Networks) Licensed Distribution System Operator's (LDSO) Distribution System through two 11kV feeders. Each feeder has independent Import and Export metering, fully compliant with Code of Practice (CoP) 3 and located at the Defined Metering Point (DMP) (the point of connection of each feeder to the LDSO's Distribution System).

1.2 The hybrid electricity generation and storage scheme is designed to be operated as a single unit to provide a frequency response service to the Transmission Company under a Balancing Services contract. Restrictions on the LDSO's Distribution System mean that the power on the two feeders has to be approximately balanced, and a protection scheme exists to de-energise the site if the Import or Export is not balanced - subject to a tolerance. Whilst the sum of the capacities of the individual elements (GUs and storage) totals 28 MW, the control system and protection system limit the Exports to 20 MW (10 MW per feeder). Furthermore, whilst it is in theory possible to individually control the generators and inverters (hence energy storage), a control scheme exists to manage the site Imports/Exports, along with the state of charge of the battery storage in order to deliver the response service. Therefore, in effect the site operates as a single unit.

1.3 The metering for the site is currently registered in the Supplier Volume Allocation (SVA) arrangements with two Import and two Export SVA Metering System Identifiers (MSIDs). PGP2 has been granted a generation licence and is seeking to register the two Import Metering Systems and the two Export Metering Systems under the Central Volume Allocation (CVA) arrangements in a single BMU.

1.4 The site has a Capacity Market arrangement. PGP2 is in discussion with National Grid Electricity Market Reform (EMR) settlements to confirm the appropriate metering configuration for EMR settlements. PGP2 have noted that where a capacity market unit is a subset of a BM Unit the options available are to either subdivide the BMU into smaller parts, or agree a bespoke metering solution. They are therefore comfortable that if the non-standard BM Unit requested is approved by the ISG, that this would not cause issues elsewhere.

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1.5 For the purpose of this paper each set of inverters connected to a battery storage module is equivalent to a Generating Unit (GU) and so we will refer to them as battery GUs[1]. Reference to battery modules is to a collection of battery GUs. This approach is consistent with references to other types of module in the Grid Code (e.g. Combined Cycle Gas Turbines (CCGT) Modules and Power Park Modules (PPMs)), which refer to collections of GUs.

1.6 PGP2 has submitted an electrical single line diagram (SLD) to support this application (Attachment B). Attachment B shows that the Settlement Meters are at the two DMPs; the connections between the energy storage scheme and the Distribution System.

2. Non-standard BM Unit application

2.1 PGP2 is seeking approval for a non-standard BM Unit for the hybrid electricity generation and storage scheme at Peterborough as it consists of multiple small diesel GUs and battery GUs. As the hybrid electricity generation and storage scheme is designed to be operated as a single unit, there is only one control system that controls the output and the input. It is also metered at two separate points, each at the Defined Metering Point.

2.2 According to BSC Section K3.1.4, each individual diesel and battery GU could be registered as a standard export BMU (per K3.1.4(a)) and the imports related to the Generating Plant in a separate standard import BMU (per K3.1.4(b)). As summarised below, PGP2 believes there are good reasons why it would be appropriate to combine all the importing and exporting Plant and Apparatus for the scheme into a non-standard BMU.

2.3 PGP2 believes that should a BM Unit be required for each diesel GU and each battery GU, then the Applicable Balancing Services Volume Data would have to be calculated by the Transmission Company individually for each of the 16 required BM Units and applied to each BM Unit individually as part of the Settlement process, which would be an administrative burden for all parties involved.

2.4 Metering Equipment would be required to be installed on all 12 Diesel GUs and four battery GUs. This would be costly, would require one or more Metering Dispensations due to metering not being at the DMP, and would decrease precision in the values as estimates would need to be made for the electrical losses between the Metering Equipment and the DMP.

2.5 The BSC Costs for the BM Units would be 16 times higher than necessary with no identifiable benefit.

2.6 In accordance with K3.1.6, the Panel may determine a configuration of Plant and Apparatus that satisfies the requirements or most nearly achieves the objectives reflected in the requirements of K3.1.2 - i.e. a non-standard BM Unit. PGP2 has made the following arguments in relation to the requirements in K3.1.2:

2.6.1 Under Section K, paragraph 3.1.2(a), responsibility for the Plant and Apparatuses' Imports and/or Exports must lie with one Party. For this BM Unit, there is one Party PGP2.

2.6.2 Under Section K, paragraph 3.1.2(b), the Imports and/or Exports to/from the Plant and Apparatus comprised in the BM Unit must be capable of being controlled independently of any other BM Units'. PGP2 has confirmed that the Peterborough energy storage scheme BM Unit will be controlled independently of any other.

[1] Neither "Battery storage" nor "energy storage" is defined in the Balancing and Settlement Code. Nevertheless, energy storage is treated as though it is a generator because the definition of a Generating Unit 'means any Apparatus which produces electricity'. Grid Code Modification GC0096 'Energy Storage' is currently considering changes to the Grid Code to explicitly recognise the role and participation of energy storage.

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2.6.3 Under Section K, paragraph 3.1.2(c), a BM Unit must have Metering Equipment which is installed pursuant to Section L and conforming to the appropriate Code of Practice (CoP) that registers quantities of electricity Imported and Exported only by the Plant and Apparatus comprised in the BM Unit and no other Plant or Apparatus. PGP2 has confirmed that CoP3 compliant Metering Equipment is installed that will measure only Imports and Exports of Plant and Apparatus belonging to BM Unit for which the Non-standard application is made.

2.6.4 Under Section K, paragraph 3.1.2(d), the BM Unit shall not comprise Plant and Apparatus whose Imports and Exports are measured by both CVA Metering System(s) and SVA Metering System(s). PGP2 has confirmed that, once all Import and Export Metering Systems have been transferred to the CVA Arrangements in accordance with BSCP68[2], then the Plant and Apparatuses' Imports and Exports will only be measured by CVA Metering Systems. Up to the point of transfer it will only be measured by SVA Metering Systems.

2.6.5 Under Section K, paragraph 3.1.2(e), a BM Unit must be the smallest aggregation of Plant and/or Apparatus that satisfies paragraphs K3.1.2(a), (b) and (c). Although in theory each diesel GU and each battery GU can be individually controlled and therefore would be the smallest aggregation of Plant and Apparatus to satisfy paragraph K3.1.2(a), (b) and (c), in practise there is only one control system and the Peterborough energy storage scheme is contracted to provide a frequency response ancillary service to the Transmission Company as a single unit.

3. Transmission Company and ELEXON comments

3.1 The Transmission Company has reviewed this application and has no issues or objections to it.

3.2 The Transmission Company wishes the ISG to note:

3.2.1 This view is from the Transmission Company as NET SO, and does not relate to any decision from the EMR delivery body in relation to the Capacity Market.

3.2.2 This should not be taken as a precedent relating to hybrid plant, the location and materiality of each application will need to be carefully considered.

3.3 ELEXON recommends that the ISG agree this application on the basis that:

- the responsibility for the flows of electricity associated with the BM Unit lie with one Party, (Section K 3.1.2 (a));
- The Plant and Apparatus associated with the Peterborough energy storage scheme is capable of independent control from any other Plant and Apparatus (Section K3.1.2(b)) not in the proposed BM Unit;
- all volumes flowing from and to the BM Units will be captured by compliant Metering Systems and these volumes will be determined separately from volumes to and from other BM Units (Section K 3.1.2 (c));
- the BM Unit does not comprise CVA and SVA Metering Systems that measure the same Imports or Exports at any one time (Section K 3.1.2 (d)); and
- although the BM Unit would not be the smallest aggregation of Plant and Apparatus that satisfies K3.1.2 (a)-(c) (Section K3.1.2(e)), the Peterborough energy storage scheme is designed to operate as a single unit.

[2] BSCP68 Transfer of Registration of Metering Systems between CMRS and SMRS

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4. Recommendations

4.1 We invite you to:

a) **APPROVE** the non-standard BM Unit for the Peak Gen Power 2 Peterborough hybrid electricity generation and storage scheme.

Appendices

Appendix 1 – BM Unit Configurations

Attachments

Attachment A – Peak Gen Power 2 hybrid electricity generation and storage scheme non-standard BM Unit Application Letter

Attachment B (CONFIDENTIAL) – Peak Gen Power 2 hybrid electricity generation and storage scheme Single Line Diagram

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APPENDIX 1 - BM UNIT CONFIGURATIONS

The BSC states that a BM Unit shall comprise Plant and/or Apparatus for who's Exports and/or Imports a Party is responsible (Section K3.1.1).

A BM Unit must satisfy the following conditions (K3.1.2):

- responsibility for the BM Unit would lie with one Party;
- it would be capable of independent control;
- it would be visible to the Settlement Administration Agent (SAA) as a metered quantity separately from anything that is not included in the BM Unit;
- the BM Unit does not comprise of CVA and SVA Metering Systems that measure the same Imports or Exports
- it would be the smallest aggregation of Plant and Apparatus that satisfies the first three bullet points above.

The BSC also sets out a number of standard configurations of BM Units (Section K3.1.4), including:

- a single Generating Unit (GU), Combined Cycle Gas Turbine (CCGT) or Power Park Module (PPM),
- a Combined BM Unit,
- the Imports through the station transformers of a Generating Plant or premises, which are directly connected to the Transmission System, at a single Boundary Point.
- directly connected premises which are connected at one boundary point only

The BSC states that a Registrant and/or Central Data Collection Agent (CDCA) / Central Registration Agent (CRA) can apply to the Panel for a non-standard BM Unit configuration in the following circumstances (K3.1.5):

- the Plant / Apparatus does not fall into a category listed in section K3.1.4 or the CDCA / CRA considers that there is reasonable doubt that this is the case;
- the Plant / Apparatus does fall into a category listed in K3.1.4 but the responsible Party considers that a different configuration would satisfy the requirements set out in K3.1.2; or
- there is more than one set of Exports/Imports at a CVA boundary Point and more than one Party is responsible for these.

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