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Our Ref: 03633-003609

21 November 2017

Dear Katie,

**Re: Non-Standard BMU application for Broxburn Energy Storage Scheme**

RES has constructed a 20MW Lithium Ion Battery Energy Storage scheme at Broxburn in West Lothian. The scheme comprises six battery containers and eleven power conversion systems (power electronic converters) connected together via a single metered 33kV point of connection to function as a single unit providing a frequency response ancillary service to National Grid Electricity Transmission Ltd (NGET). Please refer to Appendix 1 HV Collection Single Line Diagram (03633D4202-12), Appendix 2 Broxburn Energy Storage System HV Switchgear Single Line Diagram (03633D4201-12) and Appendix 3 Detailed Site Infrastructure Layout drawing (03633D3501-02)

RES and the Lead Party registrant British Gas Trading Limited (BRITGAS) consider that as the Broxburn scheme is designed and controlled to operate as a single 20MW energy storage unit rather than as individual power conversion systems and battery containers the proposed scheme configuration satisfies the requirements of BSC section K paragraph 3.1.2 and can be considered to be a single Balancing Mechanism Unit akin to a Power Park Module.

However RES understand that as energy storage is not explicitly defined as a standard BMU under BSC section K paragraph 3.1.4 there is a requirement to make a non-standard BMU application to the Imbalance Settlement Group as part of the BMU registration process. As such we would like to submit the Broxburn Energy Storage Scheme configuration to the panel for consideration as a non-standard BMU.

The crux of the consideration as a non-standard BMU is that in theory each power conversion system can individually control the energy flow to and from their respective battery containers and hence could be considered the smallest aggregation of plant that can be controlled independently under BSC section K 3.1.2(b).

However in practice there is only one control system at Broxburn that controls the output of all the power conversion systems simultaneously to achieve the desired frequency response at the single metered point of connection. It is this metered output from the total scheme at the point of connection that is contracted and measured by NGET rather than the output of the individual power conversion systems embedded within the scheme. As such RES believe that the Broxburn scheme as a single entity is the smallest configuration of plant and apparatus that satisfies the requirements of BSC section K clause 3.1.2.

With regard to the other requirements of BSC section K clause 3.1.2;

- The Lead Party registrant, British Gas Trading Limited (BRITGAS), will be responsible for the registration of the entirety of the Broxburn scheme
- There is only one defined metering point at Broxburn located at the point of connection between the scheme and the LDSO distribution system (please refer to Appendix 2 HV switchgear single line diagram). This metering point will have Import and Export MSID registered in CMRS and all imported and exported energy from the Broxburn scheme (including its auxiliary demand) whilst it is in operation will flow through this single metering point and will be visible to the Settlement Administration Agent.

Note when the energy storage scheme is shutdown the main site circuit breaker (LBS-01) will be open, and auxiliary (heating, cooling, and lighting) supplies to the site substation and power conversion system containers will be fed via a changeover switch (LVCO-01) from an alternate low voltage connection from the LDSO distribution network. This backup supply will be metered separately in SMRS. Note due to the on-site changeover switch it is impossible for this backup supply to operate in parallel with the high voltage energy storage project and feed energy through the CMRS meter.

Were a BMU to be required for each power conversion system and battery container this would have several disadvantages;

- The Applicable Balancing Services Volume Data associated with the frequency response energy volumes would have to be calculated by NGET individually for each of the eleven power conversion system BMU's and applied by Elexon individually to the eleven relevant BMU's during the settlement process which could prove a significant administrative burden for all parties concerned.
- Metering class CTs and VT's would need to be installed on all eleven power conversion systems which would be extremely expensive and would delay project energisation.
- Loss of precision would be introduced into the settlements process as estimates would need to be made of the electrical losses between the power conversion system metering and the LDSO metering point.
- The costs associated with maintaining MSID metering and CVA BM Units would be eleven times higher than otherwise necessary for a single BM unit with no identifiable benefit
- A dispensation to COP2 would be required to allow metering at a point other than at the point of connection between the LDSO distribution system and the scheme.
- Any future NGET BMU registration and operation would be significantly more complex and burdensome for both NGET and the Trading and Control Points with eleven sets of data submission via EDT from the Trading Point and the need for NGET to issue eleven simultaneous and mutually coherent instructions to the Control Point to achieve a single desired outcome from one energy storage scheme.

For all the above reasons RES and British Gas Trading Limited (BRITGAS) believe that the Broxburn Energy Storage Scheme should qualify for non-standard BMU status and hence we look forward to the Imbalance Settlement Group's decision on the 11<sup>th</sup> December. Should you require any further information to support this application please feel free to contact me by email or on either of the numbers below.

Yours sincerely,



Simon Cowdroy

Future Energy Networks Manager

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Enclosures;

- Appendix 1 Broxburn Energy Storage System HV Collection Single Line Diagram (03633D4202-12)
- Appendix 2 Broxburn Energy Storage System HV Switchgear Single Line Diagram (03633D4201-12)
- Appendix 3 Broxburn Energy Storage System Detailed Site Infrastructure Layout (03633D3501-02)