Attachment to BSCP32 application for metering dispensation Tiln Farm, Retford, DN22 9JH

Background

Lightsource BP is planning to construct a new generation site called Tiln Farm, which will be located in Retford, Nottinghamshire. The site will comprise solar photo voltaic (PV) generation and battery energy storage (BESS) at the same location and sharing the same grid connection and grid connection assets.

The capacities associated with the grid connection are 49.99MW export (MEC) and 25MW import (MIC). The capacities of the installed generation are 49.75MW for PV and 25MW for BESS.

The grid connection for the Tiln Farm site will connect into the Western Power Distribution (WPD) 132kV network. The Defined Metering Point (DMP) will be at the 132kV voltage level within the WPD owned and operated assets. This is the point of connection of the Tiln Farm private network to WPD's Distribution System. A 132/33kV transformer installed downstream of the DMP, and within the private network, will provide for connection of the PV generation and BESS generation at 33kV. This is detailed within the accompanying diagram (SLD).

Arrangement

There is a requirement to operate the PV generation and BESS generation as separate companies and to maintain separate metering for this purpose. In order to maintain a single grid connection at 132kV it is proposed to provide two Actual Metering Points (AMPs), at the 33kV voltage level in the private network, one for the PV and one for the BESS. This is detailed within the accompanying diagram (SLD).

A 33/0.4kV auxiliary transformer, installed downstream of the 132/33kV transformer and within the private network, will provide earthing at the 33kV voltage level and LV auxiliary supplies for the 132kV substation only. The 132kV substation loads will comprise protection equipment and backup supplies, heating and lighting, and with an estimate load of 40kW. The auxiliary loads for the PV generation and the BESS generation will supplied downstream of the respective Settlement Meters for each.

In order to account for the Import into the 132kV substation auxiliary circuit from the WPD network, or as a flow from the private network, i.e. from the PV or BESS generation, it is proposed to install Metering Equipment at the DMP 132kV voltage level also. This is detailed within the accompanying diagram (SLD).

Metering Dispensation

For a typical arrangement the metering for the entirety of the private network would be at the 132kV boundary between WPD and the Customer (*Lightsource SPV 232 Limited*). The request is for a Metering Dispensation which allows for Settlement metering at multiple locations in the private network:

- Inclusion of CoP2 metering (AMP) and associated Import and Export MSIDs for the PV generation circuit at 33kV
- Inclusion of CoP2 metering (AMP) and associated Import and Export MSIDs for the BESS generation circuit at 33kV

Power flows can pass between the two AMP Settlement Meter positions and the DMP, and can also only flow within the private network between the two AMP Settlement Meter positions. The latter would result in no appreciable losses in the private network. For this reason, the application of the difference metering arrangement was selected instead of an Associated Distribution System arrangement.

Licenced Distribution Network Losses (public network)

The losses associated with the public network will be accounted for in the Line Loss Factors (LLFs) applied to the MPAN associated with the DMP Settlement Meter.

Suppliers and Supplier Agents

Lightsource SPV 216 Limited will act as the BESS Generation Company, and will:

- appoint an electricity Supplier for Import and Export.
- appoint the same Data Collector (DC)/Data Aggregator (DA) as for other meters on the Tiln site.
- appoint the same Meter Operator Agent (MOA) as for other meters on the Tiln site.

Lightsource SPV 154 Limited will act as the PV Generation Company.

- appoint an electricity Suppliers for Import and Export.
- appoint the same DC/DA as for other meters on the Tiln site.
- appoint the same MOA as for other meters on the Tiln site.

Lightsource SPV 232 Limited will act as the GridCo and the grid connection customer, and will:

- appoint an electricity Supplier for Import only associated with the DMP Settlement Meters. *Note: An export register will record Half Hourly (HH) data for the DMP Settlement Meters to be used in the complex site supplementary information form aggregation rule.*
- appoint the same DC/DA as for other settlement meters on the Tiln site.
- appoint the same MOA as for other settlement meters on the Tiln site.

- apportion costs for Import and losses associated with the private network only to each generation company. The allocation will be based on the rules which are detailed within the accompanying diagram (SLD).

The appointed MOA will:

- Complete a complex site supplementary information form and issue to DC/DA and indicate complex site status in flow D0268.
- Complete a complex site validation test in accordance with BSCP502 section 3.5.6.

The appointed DC/DA will:

- calculate the Active and Reactive Power flows for the Import and losses associated with the private network only, and excluding the Import to or Export from the embedded generators.
- Settle the calculated HH Import for the MPAN associated with the DMP Settlement Meter. The calculation will be based on the rules which are detailed within the accompanying diagram (SLD).
- settle the Import and Export HH data for the PV embedded generator.
- settle the Import and Export HH data for the BESS embedded generator.
- Maintain a complex site supplementary information form provided to it by the MOA.

Licence Exempt Distribution Network Auxiliary Circuit Import and losses (private network)

The costs for Import associated with the DMP Settlement Meter and the losses in the private network will be apportioned and settled between the generation companies. The method for apportionment will be based on the proportion of kWh Import and kWh Export from each AMP Settlement Meter as a percentage of total kWh Import and kWh Export of the DMP Settlement Meter. This method allows a fair measurement for periods of utilisation and non-utilisation of the private network irrespective of the nature of the power flows (i.e., either Import or Export flows).

The percentage will be calculated by the DC/DA for 12 periods in each calendar year and applied to the PV and BESS settlement data. The starting date for each period shall be the 1st day of each month until the 1st day of the following calendar month. Non-integer values for kWh will be handled by following the rounding rules given :

- the value has a non-integer component greater than 0.5 kWh, the value will be rounded up to the next integer value e.g. 4.6 kWh will be rounded up to 5 kWh;
- the value has a non-integer component less than 0.5 kWh, the value will be rounded down to the next integer value e.g. 4.4 kWh will be rounded down to 4 kWh;
- the value has a non-integer component equal to 0.5 kWh, the value will be rounded up to the next integer value when the Settlement Period is an odd number e.g. 4.5 kWh will be rounded up to 5 kWh in Settlement Periods 1, 3, 5 etc.; and
- the value has a non-integer component equal to 0.5 kWh, the value will be rounded down to the next integer value when the Settlement Period is an even number e.g. 4.5 kWh will be rounded down to 4 kWh in Settlement Periods 2, 4, 6 etc.