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## Ferrybridge D Power Station ExCS Informal Notice - Appendix 1

29th March 2018
Our Ref: 2018 – Ferrybridge D Power Station ExCS

This Appendix relates to the proposed substitution of NTS Exit Capacity to Ferrybridge D power station exit point, from Staythorpe, Blyborough (Cottam) and West Burton DC exit points, and Blyborough DN exit points.

1. Recipient selection:

The PARCA application in respect of Ferrybridge D power station for Enduring Annual NTS Exit (Flat) Capacity triggered a PARCA Exit Window. Also during that Window further PARCA applications were received from Keadby Eastsoft power station and Thornton Curtis DN.

Ferrybridge D power station, Keadby Eastoft power station and Thornton Curtis DN are all upstream of Hatton compressor. Thus, for the purpose of substitution, it was deemed best to carry out the assessment for all these PARCA applications together.

During the assessment of the PARCA applications Knottingley power station cancelled their Phase Two PARCA. This released their substituted capacity back to their donor sites. One of these donor sites was Thornton Curtis DN. The released capacity fully met the capacity Thornton Curtis DN requested in their PARCA application. Therefore Thornton Curtis DN was removed from the assessment and the assessment proceeded with Ferrybridge D and Keadby Eastoft power stations only.

2. Donor selection:

Substitution from individual donor NTS exit points was assessed by reducing the capacity at the most favourable NTS exit Points that had Substitutable Capacity. The most favourable donor NTS exit Points will normally be the furthest downstream NTS exit Points from the recipient NTS exit point as measured by pipeline distance.

For the purposes of the NTS exit Capacity Substitution analysis, two (2) donor sequences of NTS exit Points were analysed to determine the best exchange rate.

The exit points identified as potential donor sites were as follows:

| ***NTS Exit Point*** | ***Type*** | ***Obligated Capacity (GWh/d)*** | ***Unsold Capacity (at 1st January 2018 with the addition of the cancelled Knottingley power station PARCA)(GWh/d)*** |
|---|---|---|---|
| West Burton Power Station | DC | 23.04 | 23.04 |
| Blyborough | DN | 79.33 | 23.50 |
| Blyborough (Cottam) | DC | 19.30 | 19.30 |
| Saltend BPHP (BP Saltend HP) | DC | 9.10 | 0.04 |
| Thornton Curtis (Killingholme) | DC | 91.00 | 91.00 |
| Stallingborough | DC | 68.01 | 15.31 |

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| *NTS Exit Point* | *Type* | *Obligated Capacity (GWh/d)* | *Unsold Capacity (at 1st January 2018 with the addition of the cancelled Knottingley power station PARCA)(GWh/d)* |
|---|---|---|---|
| Kirkstead | DN | 1.21 | 0.35 |
| Gosberton | DN | 15.23 | 2.91 |
| Wragg Marsh (Spalding) | DC | 37.28 | 37.28 |
| Staythorpe | DC | 82.00 | 82.00 |

The pipeline distances to the potential donor NTS exit Points are:

| *From* | *To* | *Pipeline distance (km)* |
|---|---|---|
| Ferrybridge D power station | West Burton Power Station | 61.32 |
| | Blyborough | 62.26 |
| | Blyborough (Cottam) | 62.29 |
| | Saltend BPHP (BP Saltend HP) | 85.66 |
| | Thornton Curtis (Killingholme) | 95.56 |
| | Stallingborough | 108.6 |
| | Kirkstead | 111.43 |
| | Gosberton | 141.15 |
| | Wragg Marsh (Spalding) | 153.57 |
| | Staythorpe | 167.82 |

As a result of these analyses, the final NTS exit Points selected were as follows;

| *NTS Point* | *Type* | *Recipient / Donor* | *Current Baseline (kWh/d)* | *Proposed Baseline (kWh/d)* | *Remaining unsold capacity (kWh/d)* |
|---|---|---|---|---|---|
| Ferrybridge D Power Station | DC | Recipient | 0 | 79,552,298 | 0 |
| Staythorpe Power Station | DC | Donor | 82,000,000 | 0 | 0 |
| Blyborough (Cottam) Power Station | DC | Donor | 19,300,000 | 0 | 0 |
| Blyborough (DN) | DN | Donor | 79,330,000 | 55,825,856 | 0 |
| West Burton Power Station | DC | Donor | 23,035,220 | 12,276,795 | 12,276,795 |

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In accordance with paragraph 62 of the methodology the individual donor NTS exit Point to recipient NTS exit Point exchange rate was determined and is as follows:

| ***Donor NTS Exit Points*** | ***Exchange Rate (Donor : Recipient)*** | ***Total Exchange Rate (Donor : Recipient)*** |
|---|---|---|
| Staythorpe Power Station | 2.2086 : 1 | 1.7041 : 1 |
| Blyborough (Cottam) Power Station | 1.3115 : 1 | |
| Blyborough (DN) | 1.2330 : 1 | |
| West Burton Power Station | 1.2443 : 1 | |

3. Network analysis: Supply & demand scenario

- Substitution analysis was conducted for the Gas Year 2020/21 as the first year of the capacity will be required by Keadby Eastoft power station.
- The analysis starting point is our 2020/21 1-in-20 peak day demand network. From this a North East sensitivity network is created, taking the most onerous credible demand levels for power stations (and other DCs) and DN offtakes from sold and forecast levels for the North East exit zone as detailed in Section 5, and with North East supplies reduced to a credible minimum.
- The substitution network is created from the North East sensitivity network, with the potential donor distribution network NTS exit Points in the area increased to obligation in accordance with the Methodology, as these were deemed to have a reasonable probability of being donors.
- Ferrybridge D power station NTS exit Point was set at the level of prevailing Obligated exit Capacity in 2020 ( 0 kWh/d).

4. Enhanced Network

- No System enhancements for the substitution network were required.

5. Exit points set at obligated, sold or otherwise:

- All North East DC sites are set at obligated level, with the remaining DCs being scaled back from the forecast so that the aggregate total matches the forecast total.
- Sites increased to their obligated level as part of the North East sensitivity network are the potential donors (DN offtakes) listed above; none of these sites had already been set to their obligated level.
- All other DN NTS exit points were at Sold level as booked through the annual NTS Exit (Flat) Capacity application processes.

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6. Flow adjustments:

- Flow adjustments were made in accordance with Paragraph 45 of the Methodology.
- Flow adjustments are detailed in Section 3 above, the substitution network demand is 6012 GWh/d, which is higher than the 1 in 20 peak demand (including sold capacity levels at DN NTS exit Points).

7. Remaining unsold NTS exit (Flat) Capacity at the donor NTS exit Points:

If substitution is effected as stated in this notice on 1st April 2023, the remaining unsold Annual NTS Exit (Flat) Capacity at the donor exit points is shown in the following tables.

| ***NTS Point*** | ***Type*** | ***Remaining unsold capacity (kWh/d)*** |
|---|---|---|
| Staythorpe Power Station | DC | 0 |
| Blyborough (Cottam) Power Station | DC | 0 |
| Blyborough (DN) | DN | 0 |
| West Burton Power Station | DC | 12,276,795 |

8. Summary of network analysis key parameter changes:

- No significant parameter changes were required between substitution networks.

9. Exchange Rate Validation

In order to validate that the above donor list and the sequence of substitution provides the best exchange rate, two different donor sequences were assessed. These are listed, with their respective exchange rates, in the following tables:

Sequence 1

| ***Recipient NTS Exit Point*** | ***Donor NTS Exit Points*** | ***Capacity Donated (kWh/d)*** | ***Capacity Received (kWh/d)*** | ***Exchange Rate (Donor : Recipient)*** | ***Total Exchange Rate (Donor : Recipient)*** |
|---|---|---|---|---|---|
| Ferrybridge D power station | Blyborough (DN) | 3,149,363 | 2,309,363 | 1.3637 : 1 | 2.3585 : 1 |
| | Blyborough (Cottam) Power Station | 19,300,000 | 13,269,999 | 1.4544 : 1 | |
| | Killingholme Power station | 91,000,001 | 33,299,996 | 2.7327 : 1 | |
| | Staythorpe Power Station | 74,172,943 | 30,672,939 | 2.4182 : 1 | |

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Sequence 2(Selected)

| ***Recipient NTS Point*** | ***Donor NTS Exit Points*** | ***Capacity Donated (kWh/d)*** | ***Capacity Received (kWh/d)*** | ***Exchange Rate (Donor : Recipient)*** | ***Total Exchange Rate (Donor : Recipient)*** |
|---|---|---|---|---|---|
| Ferrybridge D Power Station | Staythorpe Power Station | 82,000,000 | 37,127,592 | 2.2086 : 1 | 1.7041 : 1 |
| | Blyborough (Cottam) Power Station | 19,300,000 | 14,715,974 | 1.3115 : 1 | |
| | Blyborough (DN) | 23,504,144 | 19,062,566 | 1.2330 : 1 | |
| | West Burton Power Station | 10,758,425 | 8,646,166 | 1.2443 : 1 | |