

MEMO

INTERRUPTIBLE CAPACITY AT ELLUND - CALCULATION OF PROBABILITY

According to TAR NC Article 29, TSOs must publish the explanation of how the probability of interruption is calculated for each type of product, and the data behind the calculation, before the annual auction in July¹. Energinet has presented the explanation of the calculation for interruptible capacity at the interconnection point Ellund at the Shippers' Forum on 6 June 2019, and slides from this event are published². This document follows up on the presented material.

Since interruptible capacity was introduced in the Danish gas grid in 2006, Energinet have calculated a rebate for interruptible capacity, based on the probability of being interrupted, calculated by comparing the expected interruptible amount with the possible flow. Thus, the practice for calculating the rebate for interruptible capacity described in TAR NC Article 16 is familiar to Energinet, as this is the same practice that has been carried out for many years.

For the coming gas year, Energinet will only offer interruptible capacity on a day-ahead basis, in both directions (Ellund exit southbound towards Germany, and Ellund entry northbound from Germany). Interruptible capacity in the direction Ellund entry has not been offered since 2013, but is reintroduced, because of the redevelopment of the largest Danish gas field Tyra, which will run from September 2019, and until July 2022³.

As no interruptible capacity has been booked nor interrupted in both directions since 2013, Energinet does not have any relevant empiric or historical data, to back up the calculation of the probability. Because of this, Energinet have calculated a rebate level of 10 per cent in both directions at Ellund, based on an estimate of the parameters in the TAR NC formula (see calculation and examples below). The percentage will be reviewed and possible adjusted each year, based on any empiric data obtained during the previous gas year.

Estimating the probability at Ellund

The formula for calculation the probability of interruption, and thereby the rebate level is listed in TAR NC Article 16 as follows:

¹ TAR NC Article 29 B ii 2 & 3

² <https://en.energinet.dk/Gas/Forums>

³ <https://en.energinet.dk/Gas/Tyra>

$$\text{Pro} = \frac{N \times D_{\text{int}}}{D} \times \frac{\text{CAP}_{\text{av. int}}}{\text{CAP}}$$

Hereby follows 2 examples of how Energinet estimates the probability of interruption for Ellund entry, based on the TAR NC formula. Same method is applied for Ellund exit:

Example A: all capacity is interrupted for 2 hours out of 24 hours (day-ahead capacity)

- N: number of interruptions = 1
- D_{int}: duration of interruption = 2
- D: duration of product = 24
- CAP_{av.int}: how large an amount is interrupted of the total capacity = 2,5 GWh/h
- CAP: total interruptible capacity offered = 2,5 GWh/h

Formula: $((1 \cdot 2) / 24) \cdot (2,5 / 2,5) \Rightarrow 0,0833 \cdot 1 = \text{approx. } 8,3 \text{ per cent} \Rightarrow \text{rounded up to } \underline{10 \text{ per cent}}$

Example B: a small amount of capacity is interrupted for all hours (day-ahead capacity)

- N: number of interruptions = 1
- D_{int}: duration of interruption = 24
- D: duration of product = 24
- CAP_{av.int}: how large an amount is interrupted of the total capacity = 0,2 GWh/h
- CAP: total interruptible capacity offered = 2,5 GWh/h

Formula: $((1 \cdot 24) / 24) \cdot (0,2 / 2,5) \Rightarrow 1 \cdot 0,08 = \underline{8 \text{ per cent}} \Rightarrow \text{rounded up to } \underline{10 \text{ per cent}}$