

Explanatory note of NemoLink local solution for capacity calculation methodology for the day ahead market timeframe.

As the new interconnector UK-BE NEMOLINK shall be operational in Q1 2019 which is before the expected go-live date of the target solution as stated in art 27 (2) of coordinated Capacity Calculation methodology in Channel for the day ahead and intraday market, a temporary local solution has been put in place for the commercial go-live of the new interconnector UK-BE NEMOLink in the beginning of 2019.

This document presents the solution that will be applied by Elia in line with the art 27 (5) to determine the DA capacity on NEMOLINK as part of a stepwise implementation of the target solution. This solution calculates the Net Transfer Capacity (NTC) proposed by ELIA based on the common Grid models representing the Continental Europe (CE) synchronous area.

In this document, Nemo Link Limited (NLL), National Grid Electricity Transmission plc (NGET) and ELIA System Operator NV (ELIA) refer to the 3 Parties.

Summary

In line with the Article 5 (1) of the Channel TSOs proposal of common capacity calculation methodology, ELIA shall calculate the capacity for the Nemo Link and for each day-ahead market time unit using the following approach:

- The capacity shall be equal to the Maximum Power Transfer Capacity (MPTC)¹ value unless a specific planned or unplanned outage with significant impact (see list of outages with significant impact in Annex) on the interconnector exists in in ELIA grid. The specific planned or unplanned outages with significant impact on the interconnector shall be defined as follow:
 - The grid elements which will have a maximum PTDF above a threshold of 5%, computed on a Critical Network Element in base case and following any contingency (N-1) as

¹ MPTC' means, for the relevant market time unit(s), the maximum permanent technical capacity which is the maximum continuous active power which a cross-zonal network element (interconnector/HVDC system) is capable of transmitting (taking into account potential reduced availability due to planned and unplanned outages of the interconnector asset). This parameter is defined by the interconnector's asset operators, and only considers the interconnector asset availability.

defined in the Article 7 of Channel TSOs proposal of common capacity calculation methodology;

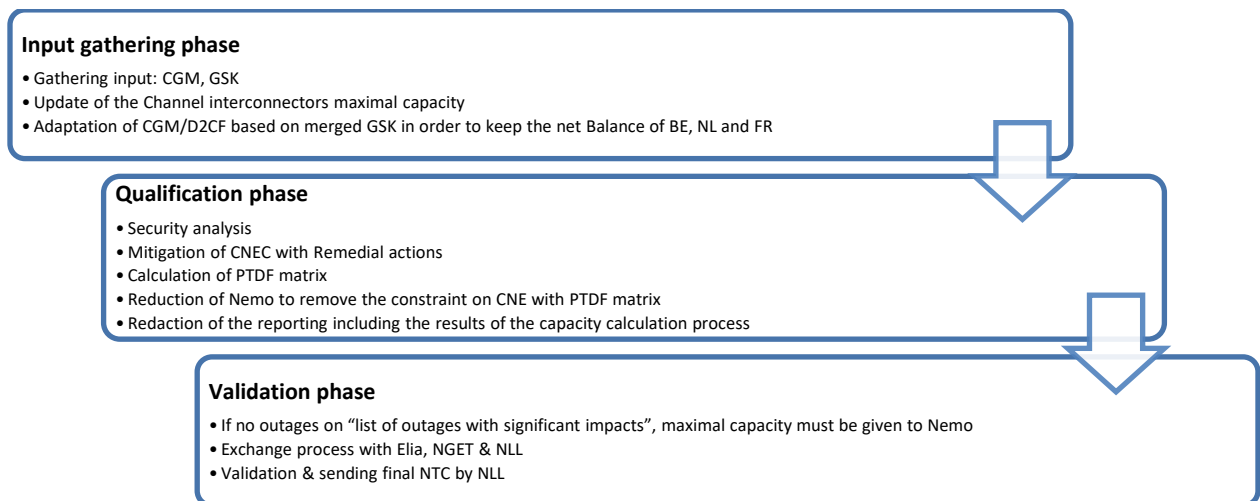
- The list of grid elements can be further reduced by the TSO based on operational experience.
- In case of occurrence of one of these specific planned or unplanned outages, the capacity for each day-ahead market time unit shall be calculated using the latest Common Grid Models (CGM) developed according to the common grid model methodology in accordance with Article 17 of the CACM Regulation. The day-ahead capacity calculation shall be composed of the following 3 phases; Input gathering phase (including gathering inputs and merging phase), Qualification phase (reduction included) and the Validation phase.

The input data that will be used for the Capacity Calculation are: Common Grid Models (CGMs) aiming at representing the best forecast of the CE synchronous area for the computed timestamps, the Generation Shift Key (GSK) of BE, NL and FR, the Critical Network Elements (CNEs) of BE, Maximum current on a Critical Network Elements (I_{max}) / Maximum allowable power flow (F_{max}), the Remedial actions (RAs) and Maximum permanent technical capacity (MPTC). These inputs, in line with the Article 13 of Channel TSOs proposal of common capacity calculation methodology, are covering each hour of the day.

ELIA shall use the CGMs merged in the scope of the CWE FB DA and shall update the values of the Channels interconnectors to represent full Channel import and export situations between the UK and the CE synchronous area. ELIA shall then perform the qualification of the NTCs using a simplified approach for selecting the Remedial Actions.

Process Description

The following picture provides a more detailed overview of the DA process:



First, the **Input gathering phase** will consist of the following steps:

- Step 1. Input data provision: DA CGM, GSK, CNEs FRM, F_{Max} , RAs, MPTC

- Step 2. Update of the Channel interconnectors maximal capacity
- Step 3. According to the Article 16 of the Channel TSOs proposal of common capacity calculation methodology, the Generation Shift Keys (GSK) should be applied to each base case in order to reflect each Interconnector operating at:
 - Maximum import
 - Maximum export

Then, the **Qualification phase** (the sub-process of Reduction included) can be described by the following steps:

- Step 1. Run contingency analysis on the maximum import and export cases using the ELIA Critical Network Elements list. These CNE are defined according to the Article 7 of the Channel TSOs proposal of common capacity calculation methodology.
- Step 2. Evaluate results for each hour of the day
 - that permit the Nemo Link capacity at maximum import/export without further consideration
 - that indicate a possible Nemo Link import or export limitation due to a thermal overload on one of the CNE.
- Step 3. For each relevant base case identified in Step 2 (b), evaluate the impact of remedial actions. If remedial actions can mitigate the CNE or Operational Security Standard violation, the Nemo Link MPTC can be made available for that base case.

The sub-process of Reduction from the Qualification phase will consist of the following steps:

- Step 1. The power transfer distribution factor (PTDF) matrix between the overloaded CNE shall be calculated to define the sensitivity of the Nemo link to the overloaded CNE.
- Step 2. If the remedial actions provided cannot alleviate the CNE violation, the Nemo Link import/export should be reduced using PTDF matrix until the CNE violation does not exist anymore.

Validation Phase is common part between the 3 Parties (see the description just below).

Common Part to NGESO, ELIA and NLL

Validation phase can be described by the following steps:

- Step 1. ELIA sends its proposed NTCs to NLL. ELIA will send the calculated NTC by 09:30 (CET) D-1 at the latest.
- Step 2. For each hour, NLL takes the minimum value between ELIA and NGESO's NTCs and Nemo Links MPTC
- Step 4. By 10:15 (CET), NLL sends the final NTC to NGESO and ELIA.

Fallback approach:

- In case there is no result for less than 3 consecutive TS (out of the 24 TS), the NTC equal the mean between the two adjacent TS.
- In case there is no result for 3 to 6 consecutive TS (out of the 24 TS), the NTC equal the lowest value of NTC for the current day.
- In case there is no result for 6+ consecutive TS (out of the 24 TS), a manual calculation will be perform by the operator based on the calculated value for the previous day

Backups

- In case there is no inputs data for the Business Day, the DACF file for the day before will be used as input data for the process.
- In case there is no possibility to run the process, a manual calculation will be perform by the operator based on the calculated value for the previous day.