

Explanatory note of NemoLink local solution for long-term capacity calculation methodology for the month, quarter and year-ahead market timeframes.

As the new interconnector UK-BE NEMOLINK is operational from January 2019 which is before the implementation of coordinated Long Term Capacity Calculation methodology in Channel, a temporary local solution has been put in place to allow calculation of Long Term Capacity.

This document presents the solution that will be applied by Elia in line with the principles of the interim DA 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. The NTC is not necessarily equal to the capacity available in each auction timeframe (ATC).

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

Summary

ELIA shall calculate the capacity for the Nemo Link for each long-term market time frame using the following approach:

- The principle of the Minimum Guaranteed Value will be used. The lowest calculated value during capacity calculation process (cf. hereunder) will be given as NTC for the whole considered period, without any reduction periods. Therefore, from the target period, only the most critical grid situation(s) will be considered for capacity calculation (based on planned outages and power plant revisions).
- To represent these critical grid situations, the latest Common Grid Models (CGM) developed according to the common grid model methodology in accordance with Article 18 of the FCA Regulation shall be used and adapted. Until the CGM methodology has been implemented, Elia shall use historical grid models which will be adapted. These adaptations will consist mostly of updating grid availabilities (based on outage planning) and power plants availabilities (based on revision planning).
- Given the unpredictability of international flows and renewable production in a future grid situation, four models will be created in order to consider all possible grid configurations
 - High international North to South flows combined with high renewable infeed

- High international North to South flows combined with low renewable infeed
- High international South to North flows combined with high renewable infeed
- High international South to North flows combined with low renewable infeed

From all these grid configuration the Net Transfer Capacities on NemoLink (import and export) shall be calculated and the lowest values will be kept.

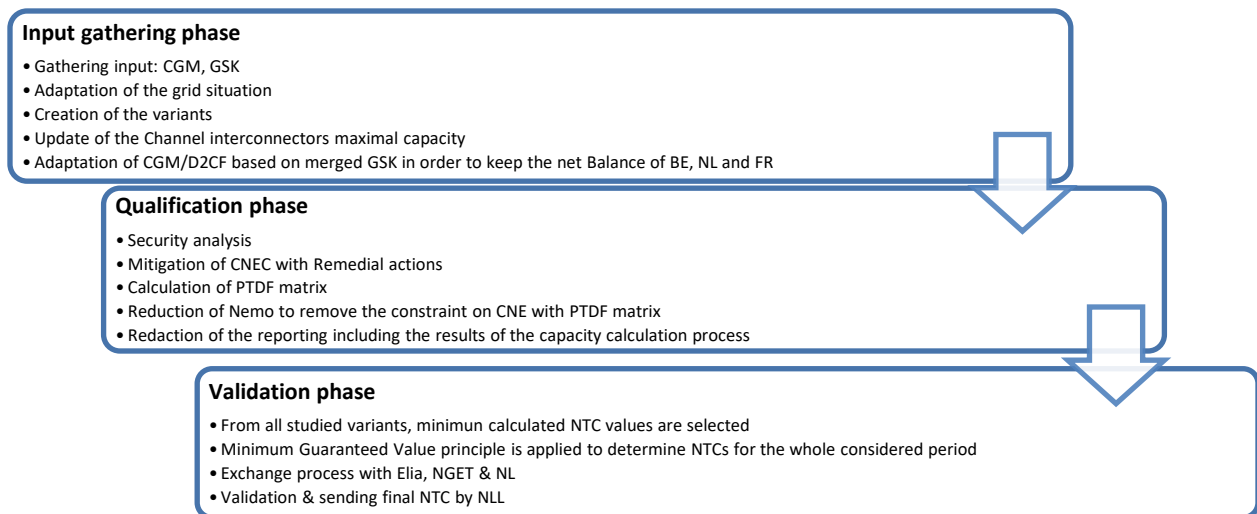
- This long-term capacity calculation shall be composed of the following 3 phases; Input gathering phase (including inputs gathering, merging and creation of variants), Qualification phase (reduction included) and Validation phase.

The input data that will be used for the Capacity Calculation are: Common Grid Models (CGMs), the Generation Shift Key (GSK) of BE, NL and FR, the Critical Network Elements (CNEs) of BE, Maximum current on a Critical Network Elements (Imax) / Maximum allowable power flow (Fmax), the Remedial actions (RAs) and Maximum permanent technical capacity (MPTC).

ELIA shall use one of the available grid model (long term model or CGMs merged in the scope of the CWE DA process), adapt the grid situation in Belgium and create the variants here above. On each of the created variants, ELIA 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. From the results obtained for each of the variants studied, Elia shall select the lowest values as final NTCs.

Process Description

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



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

- Step 1. Input data provision: DA CGM, GSK, CNEs FRM, FMax, RAs, MPTC
- Step 2. Update of the grid situation to represent critical grid situation from target period (planned outages and revisions)
- Step 3. Creation of the four variants described in Summary

- Step 4. Update of the Channel interconnectors maximal capacity
- Step 5. 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 listed in Annex.
- Step 2. Evaluate results for each of the considered variants
 - 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, and if the Nemo link has a significant impact on the overloaded CNE (sensitivity threshold), the Nemo Link import/export should be reduced using PTDF matrix until the CNE violation does not exist anymore.

Validation Phase consists of the selection of the minimum NTC values from all calculated variants and application of the Minimum Guaranteed Value principle. The rest of the validation phase is common part between the 3 Parties (see the description just below).

Common Part to NGESO, ELIA and NLL

The end of the validation phase can be described by the following steps:

- Step 1. ELIA sends its proposed NTCs to NLL. ELIA will send the calculated NTC in a timely matter.
- Step 2. For each business day, NLL takes the minimum value between ELIA and NGESO's NTCs and Nemo Links MPTC.
- Step 4. By the time the auction specification is published, NLL sends the final NTC to NGESO and ELIA.

Fallback approach:

- In case there is no result available for the aforementioned deadline, the NTC values will be equal to the previously calculated NTCs (if any). E.g: if no NTCs could be calculated for the month of January 2019, the volume for quarter 1 2019 (or for the year 2019 if quarterly volume not available) shall be used

Backups

- In case there is no possibility to run the process, a manual calculation will be performed by the operator based on the calculated value for the previous period.