IMPACT ASSESSMENT FOR THE INCLUSION OF NEMOLINK

Brussels, 05/12/2018

CONTEXT

In the CWE Consultative Group of 30/03/2016 it was agreed that TSOs would perform a Standard Procedure for Assessing the Impact of Changes (SPAIC) in order to assess some changes pre-defined in the slides presented. Elia decided also to perform a SPAIC analysis in order to inform Market Participants on the impact of the planned introduction of the NemoLink interconnector between Belgium and GB on the CWE region in Q1 2019.

The NemoLink interconnector has a capacity of 1000MW. The loss factor of the cable taken into account for the SPAIC study is 2.5%. However, as of go-live, this loss factor could differ.

A SPAIC analysis consists of a comparison of flow-based domains and market results for 12 typical “reference” days, commonly predefined by CWE TSOs, in order to estimate the impact of a change in grid topology or flow-based parameters.

This document provides some background to the results of the performed SPAIC analysis.

For this SPAIC analysis, the most up to date CWE grid topology was considered for the impacted CWE market area.

1. Disclaimer

1. *Full Grid assumption*
   Outages impacting the change were removed from the Grid Models, this to ensure that the SPAIC represents only the impact of Nemo Link and is not compounded with historical outages.

2. *MinRAM application*
   MinRAM of 20% was applied for all days in CWE

3. *Capacity calculation*
   The FB calculation was updated to consider the flow over the interconnector in the grid model, which impacts the flow on all CBCOs. In the proximity of the connection point of Nemo Link, additional offshore wind will be connected. The additional installed capacity was considered in the capacity calculation process (not for market analysis, which is based on historic bids). The reference flow on NemoLink was estimated by running a market coupling simulation.

4. *Market results based on 12 SPAIC days*
   The FB capacities are based on 12 days for a whole year of Market Results. As in 2 of the 12 days BE price peaks occurred, the market coupling results need to be interpreted with care having the underlying assumptions and limitations in mind[1]. Results change when these days are taken out of the analysis (e.g. average change in price in Belgium,…).

[1] The two concerned SPAIC days with historical BE price peaks are Day 20171116 & Day 20170119. The link with the respective days can be found in the Dataset 5.

5. *Market analysis based on historical bids*
   Only historic bids were taken into account in the market analysis (i.e. no additional bids were introduced for the SPAIC days).

6. *No BE External Constraint*
   In Belgium there is a constraint on the maximum amount of acceptable import. So far this limit has been put as a constraint in the CWE capacity calculation (i.e. the FB CC domain is capped to the maximum acceptable amount of import). However, Elia has requested a change in PCR to move this constraint to Euphemia in order to limit the overall import over Nemo Link and within CWE[2] as described in the CWE FB MC Approval Package (Art. 4.1.9.). Therefore the EC was not modelled anymore in the CWE FB domains in this SPAIC analysis.

2. Methodology

The following results are simulated and published:

1. The new pre-solved Flow-Based domains and CBCOs (anonymized for DE and AT), corresponding with the most probable grid topology (when writing this document) applied to all reference days;
2. Updated historical and new market coupling results of the SPAIC days performed with Euphemia 10.2 (i.e. version currently in operation).

The data of the simulation results is joined to this document.

[2] This feature in PCR will not be available at go-live of Nemo Link, but is planned to be implemented in PCR later in 2019. Before this feature is implemented in PCR, the Belgian EC will be maintained in the CWE capacity calculation.

3. Published datasets

The table below summarizes the standard outputs of a SPAIC analysis that were agreed upon, including a reference to the joined datasets indicating where the corresponding information can be found.

#	Expected output	Description	Dataset
1	Description change and features of the typical days	A qualitative description of the foreseen change, period and expected high-level impact resulting from this A description of the main quantitative features of the 12 typical days	• Foreseen change: Cover note • Description of the typical days: Dataset 5
2A	Capacity calculation indicators Dataset ***historical benchmark*** • 24 PTDF matrixes + RAM for each typical day and for all fixed labels • Min/max Net positions • Volume	This is the dataset that is used as a reference for the change that is subject of the change	• PTDF matrices + RAM: Dataset 1 – Sheet “Historical Benchmark 2A” • Min/Max NP: Dataset 2 – Sheet “Historical Benchmark 2A” • Volume: Dataset 3
2B	Capacity calculation indicators Dataset ***updated historical benchmark*** • 24 PTDF matrixes + RAM for each typical day and for all fixed labels • Min/max Net positions • Volume	This is the dataset that is updated, including all methodological changes that are known at the time of the study	• PTDF matrices + RAM: Dataset 1 – Sheet “Updated Historical Benchmark 2B” • Min/Max NP: Dataset 2 – Sheet “Updated Historical Benchmark 2B” • Volume: Dataset 3

2C	Capacity calculation indicators Dataset ***<u>including change</u>*** • 24 PTDF matrixes + RAM for each typical day and for all fixed labels • Min/max Net positions • Volume	This is the dataset that includes the change that is subject of the impact assessment	• PTDF matrices + RAM: Dataset 1 – Sheet “SPAIC 2C” • Min/Max NP: Dataset 2 – Sheet “SPAIC 2C” • Volume: Dataset 3

3A	Market simulation indicators for the dataset ***<u>updated historical data</u>***	After the capacity calculation is performed, also simulations will be performed to have insight in impact on prices
		• Market price indicators (price convergence, price spreads, price volatility)
		• PRBs indicators (number of PRBs, magnitude of delta P)
		• Market clearing volumes (max executed {Supply, Demand})
		• Net positions
		• Welfare
		• Congestion income
		• NemoLink flow
			All information can be found in Dataset 4. Column A indicates whether the data refers to #3A or #3B.
			
			• Market price indicators:
			  • price convergence: Sheet “P+NP”
			  • price spreads: Sheet “MarketSpread”
			  • price volatility: Sheet “Volatility”
			• PRBs indicators (number of PRBs, magnitude of delta P): Sheet “PRBs”
			• Market clearing volumes (max executed {Supply, Demand}): Sheet “Volumes”
			• Net positions: Sheet “P+NP”
			• Welfare: Sheet “Social Welfare”
			• Congestion income: Sheet “Social Welfare”

3B	Market simulation indicators for the dataset ***<u>including changes</u>***		