



IMPACT ASSESSMENT FOR THE PLANNED OUTAGE OF TWO ELIA 380 KV LINES BETWEEN MERCATOR – HORTA

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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) for grid outages with a duration exceeding one month.

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.

Elia plans subsequent works on the two 380 kV Belgian internal lines between the Mercator and Horta substations. The works are aimed at renovating the high-voltage line between Mercator and Horta. More specifically, the AMS conductors on the line are being replaced with high-performance HTLS conductors for which the pylons and foundations are being reinforced.

One of both lines will remain in operation at any point in time, while the capacity of the line in outage is reduced to 0 MW. The outage (within the Belgian bidding zone) is currently planned to start on 08/05/2017 (week 19) and is expected to end on 27/10/2017 (week 43). The most recent information regarding the outage period can be retrieved from the Entso-e Transparency website (https://transparency.entsoe.eu/).

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

For this SPAIC analysis for the impacted CWE market area, the most up to date grid topology was considered that will apply during the outage period when performing this SPAIC analysis.

Rating	Season	Elia		
		Start	End	
Fmax1	Winter	16/11	15/03	
Fmax2	Spring	16/03	15/05	
Fmax3	Summer	16/05	15/09	
Fmax2	Autumn	16/09	15/11	

Thermal limits and FRM of the overhead lines, expressed in MW:

Element Name	EIC	Fmax1	Fmax2	Fmax3	FRM
L 400kV NO 1 HORTA- MERCATOR	22T201610202C	1385	1468	1551	155
L 400kV NO 2 HORTA- MERCATOR	22T201610203A	1515	1606	1697	188



1. Methodology

The following results are simulated and published:

- 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) during the outage period applied to all reference days;
- 2. Historical and new market coupling results of the SPAIC days performed with Euphemia 9.5 (i.e. version currently in operation).

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



2. 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 10 typical days	 Foreseen change: Cover note Description of the typical days: Dataset 5
2A	Capacity calculation indicators Dataset <u>historical benchmark</u> • 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 <u>updated historical</u> <u>benchmark</u> • 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 <i>historical data</i>	After the capacity calculation is performed, also simulations will be performed to have insight in	All information can be found in Dataset 4. Column A indicates whether the data refers to #3A or #3B.
3В	Market simulation indicators for the dataset <u>including</u> <u>changes</u>	 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 	 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"