THE NORDIC CAPACITY CALCULATION METHODOLOGY PROJECT

During the entire period of the new CCM preparation, and latest in the December 2018 Stakeholder Forum, some concerns were expressed linked to the possibility of having flows from high-price to low-price bidding zones under a FB allocation. These flows are also referred to as "non-intuitive" flows and, although they seem illogical, they are a way to optimize the flows in a meshed grid as they can relieve congestions on constrained elements. Non-intuitive flows occur when the welfare economic cost of a non-intuitive flow is smaller than the welfare economic benefit of relieving a congestion. By relieving capacity on congested grid elements, non-intuitive flows contribute positively to the overall market efficiency, and thus generate a market-wide efficiency gain.

The Nordic CCM project has analyzed the results of FB market coupling simulations where the so-called intuitive patch in Euphemia has been activated to prevent these "non-intuitive" flows. The results of these simulations have been shared with you in the Newsletter 2019/2. Unfortunately, some mistakes surfaced, and the numbers have been corrected in this newsletter. The difference in socio-economic welfare (FB original – FB intuitive) went from 1.5 MEUR to 1.6 MEUR with the new numbers.

Please be aware though that in the meantime, after the ACER decision 04-2020, the use of the intuitive patch in Euphemia is no longer an option. In the next paragraph, the excerpt of the ACER decision, and the link to the decision, are presented to you as well.

ACER Decision 04-2020 on Algorithm methodology
On January 30 2020, ACER decided on the nominated electricity market operators' proposal for the price coupling algorithm and for the continuous trading matching algorithm, also incorporating TSOs' and NEMOs' proposals for a common set of requirements (link).

In the article 123 is states:

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(123) During the consultation with NEMOs, TSOs and regulatory authorities, ACER received inputs that the requirement for intuitive flow-based approach does not have a legal basis in the CACM Regulation and has a significant impact on the SDAC algorithm. The Agency evaluated this claim and indeed concluded that the intuitive flow-based approach cannot be supported by the SDAC algorithm because:

(a) The constraints required to enforce intuitive solution for the flow-based approach cannot be accommodated by Article 39(1) of the CACM Regulation, which defines inputs to the SDAC algorithm, because these constraints are neither supported by the cross-zonal capacities nor by allocation constraints. In case of flow-based approach, the cross-zonal capacities are flow-based parameters (i.e. available margins on critical network elements and power transfer distribution factors) and in case of allocation constraints these are, according to Article 23(3) of the CACM Regulation, the constraints that are needed to maintain the transmission system within operational security limits and that cannot be transformed efficiently into maximum flows on critical network elements; or the constraints intended to increase the economic surplus for single day-ahead or intraday coupling. The constraints required to enforce intuitive solution for the flow-based approach do not fit into either of these categories.

ACER
Agency for the Cooperation of Energy Regulators

PUBLIC

Decision No 04/2020

(b) The constraints required to enforce intuitive solution for the flow-based approach are directly contradicting Article 38(1) of the CACM Regulation, which requires that the SDAC algorithm aims at maximising the economic surplus, while respecting cross-zonal capacities and allocation constraints. This is because the constraints required to enforce intuitive solution for the flow-based approach are limiting the maximisation of the economic surplus in order to achieve intuitive solution. Such limitation of economic surplus has no legal basis in the CACM Regulation.

Therefore, ACER deleted paragraph 2.2 and 3.4 form the Common set of requirements for the price coupling algorithm.

Updated simulation results of the "FB intuitive"

The Nordic CCM project has analyzed the results of FB market coupling simulations where the so-called intuitive patch in Euphemia has been activated to prevent "non-intuitive" flows. The analysis below compares market simulation results for flow based where non-intuitive flows are allowed (FB original; the same results that already have been presented to the stakeholders) with market simulation results where the "intuitive patch" has been activated (FB intuitive). A total of 76 days from the already simulated 11 weeks in 2017 are included in the analysis.

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Figure 1 shows the cumulated socioeconomic welfare gains of FB compared to NTC (difference in welfare with FB and with NTC), for both "FB original" and "FB intuitive". It can be seen that, over the studied period, the cumulated socioeconomic welfare gains for flow based with the intuitive patch (FB intuitive) compared to NTC resulted in around 1.6 MEUR less than for flow based that allowed for non-intuitive flows (FB original). This means that by activating the intuitive patch, and enforcing more restrictions in the optimization algorithm, a total of around 1.6 MEUR would have been lost in welfare for these weeks.
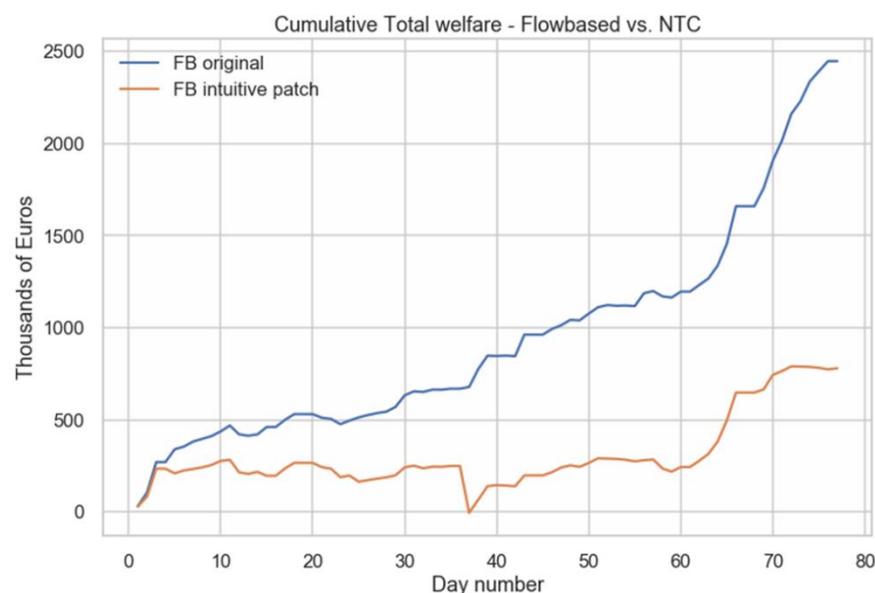

Figure 1: Cumulated socioeconomic welfare gains with FB compared to NTC (difference in welfare with FB and with NTC). Reading: After the first 60 days of the studied period, the welfare gain using FB original, compared to NTC, is about 1.2 MEUR and the welfare gain using FB intuitive is about 250 kEUR.

Figure 2 shows the differences in socioeconomic welfare, but now represented by its three components (being consumer surplus, producer surplus, and congestion rent), between FB original and FB intuitive (rather than between FB and NTC as in the previous figure) for all of the Nordics. It can be seen that producers and consumers experience an aggregated welfare loss over the studied period whereas congestion rents increase when activating the intuitive patch. The activation of the intuitive patch introduces new constraints on the trade exchanges and

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THE NORDIC CAPACITY CALCULATION METHODOLOGY PROJECT

therefore leads to larger price differences between bidding zones and a higher congestion rent.
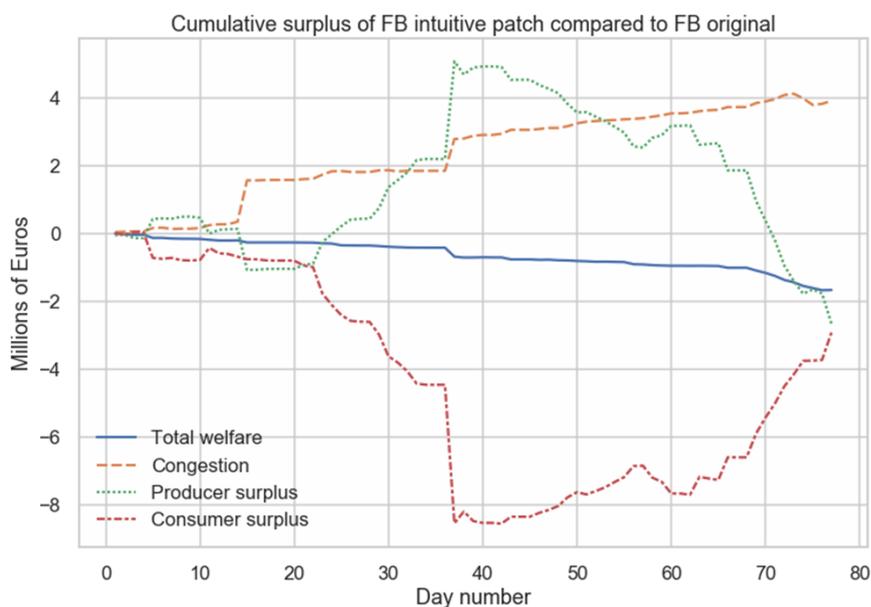

Figure 2: Cumulated differences in welfare and its three components between FB original and FB Intuitive. Reading: after the first 40 days of the studied period, the congestion rents would have increased by around 3 MEUR due to the intuitive patch, compared to FB original.

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