



Relation between NTC and FB

Nordic CCM Stakeholder Meeting on intraday
October 7, 2021

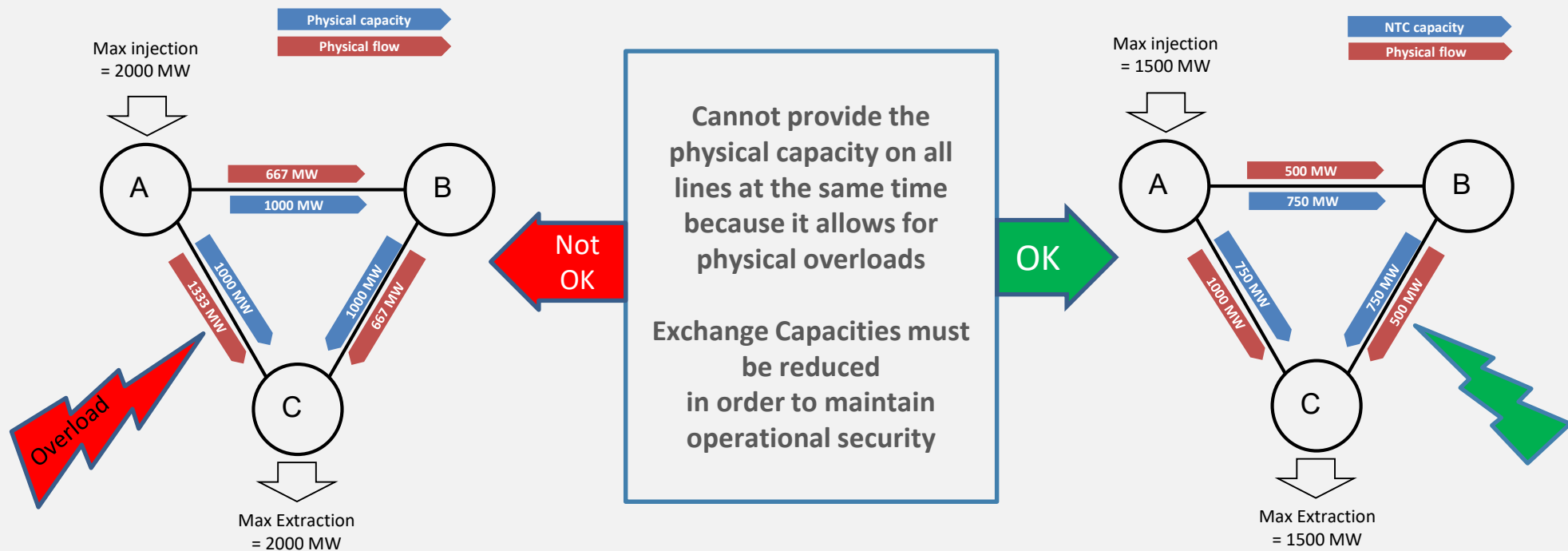
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NTC-capacities

- NTC-capacities are provided to the PX as a MW limit for each BZ border
- NTC-capacities contains no information on real physical flows
- NTC-capacities limits the Net Position of each bidding zone





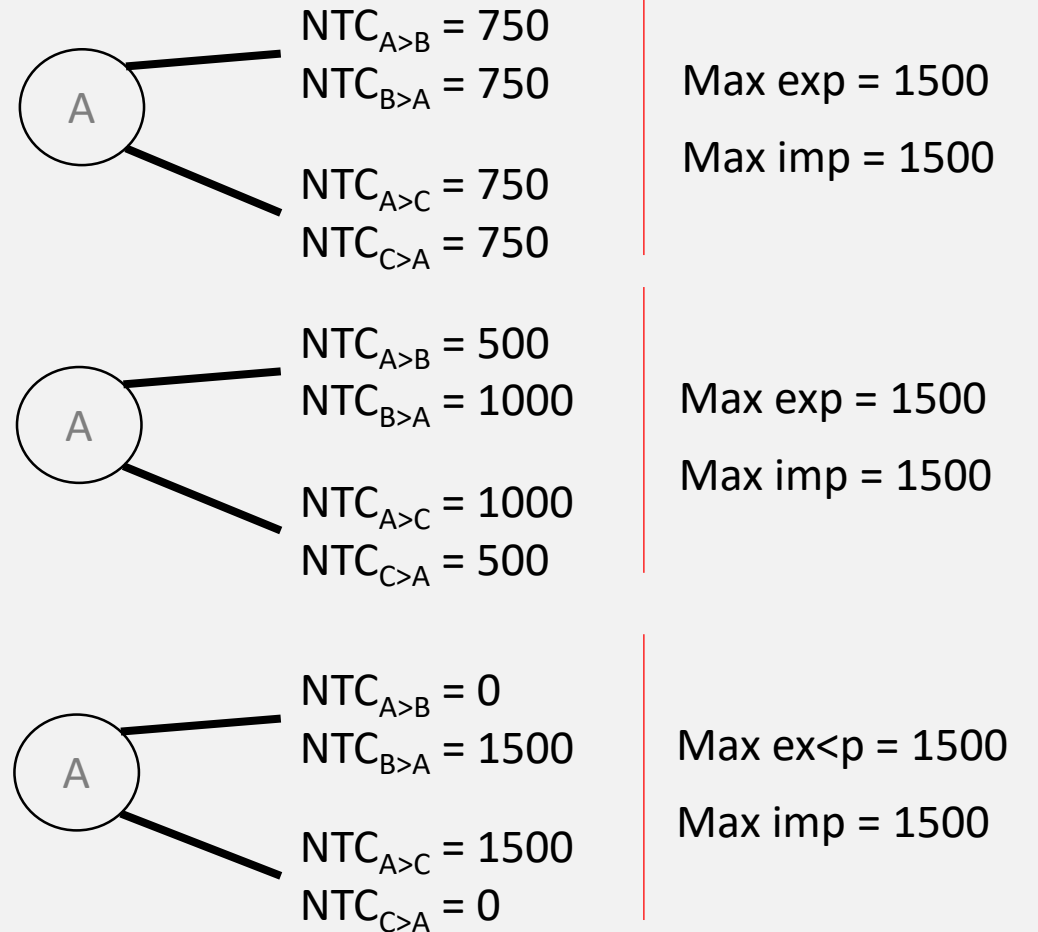
Individual NTC-values

NTC-values are capacities assigned to each bidding-zone border intended to provide constraints for total import and export for each bidding zone

Market algorithm:

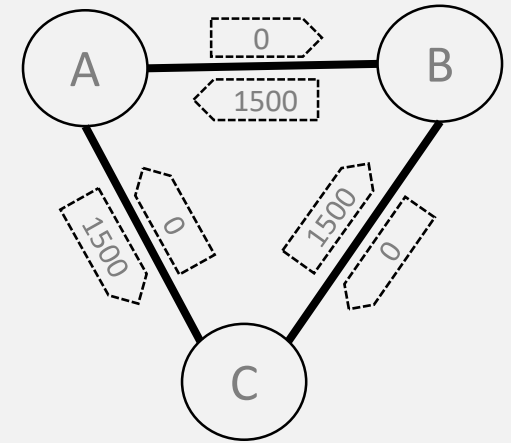
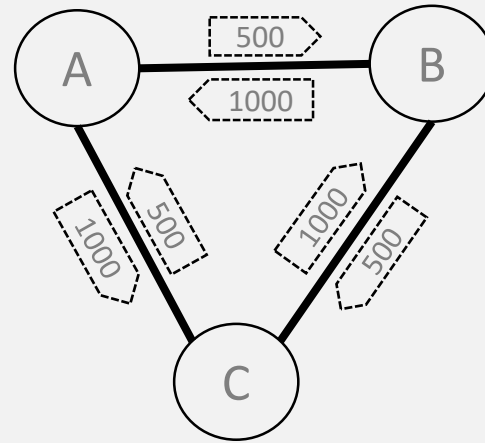
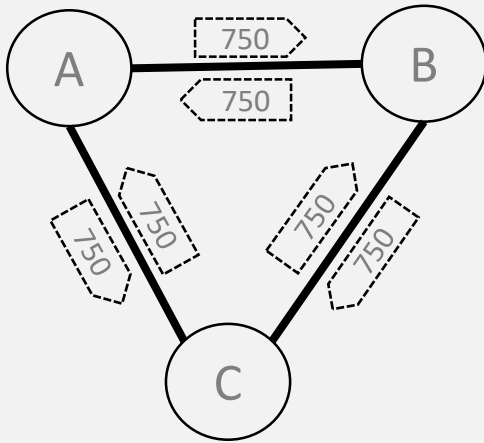
Objective: Maximize welfare economic surplus (Producer surplus, consumer surplus & Congestion income)

Constraints: $NP_i \leq \sum_j NTC_{ij}$
 $NP_i \geq \sum_j NTC_{ji}$

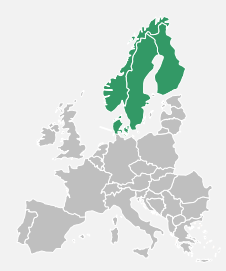




The interaction between NTC-values



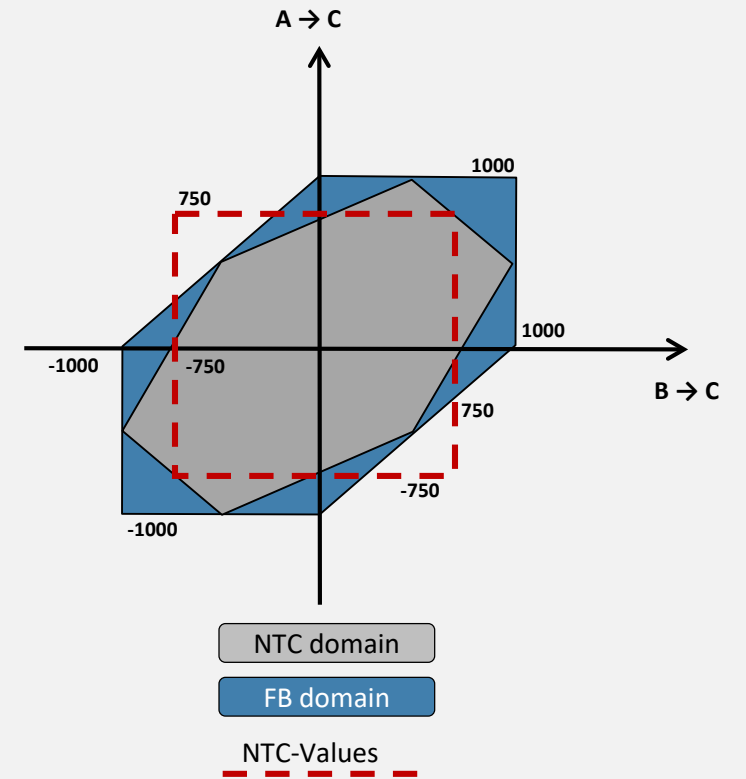
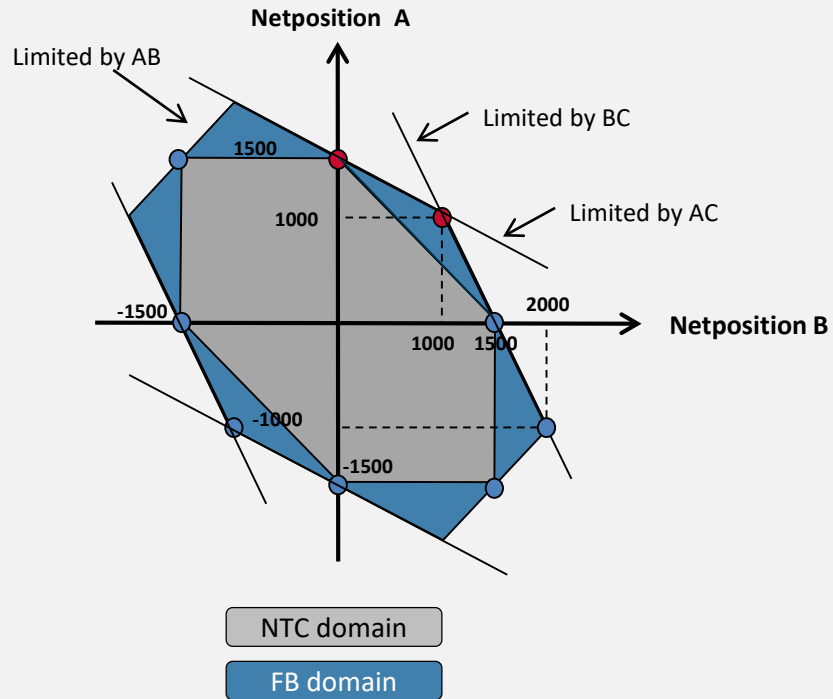
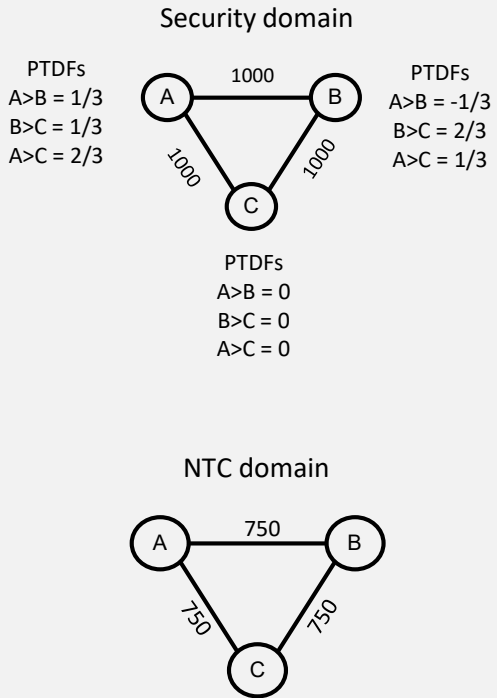
The opportunities for trade remains unchanged as long as the import and export limits for each individual bidding zone remains the same



Relation between the security domain/FB domain and the NTC domain

The domains of all allowed combination of net positions in NTC & FB

The domains of all allowed combination of commercial flows in NTC & FB





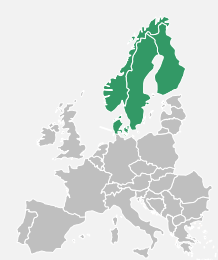
The (future) Nordic NTC calculation

- The NTC-capacities should maximize the opportunities for trade
 - The NTC-capacities should not allow overloads
 - The NTC-capacities should respect the base-case (expected NPs)
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- The NTC-domain should be as large as possible, but remain inside the security-domain, and contain the base-case
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- Apply an optimization process to obtain NTCs from the linearized CGMs



Hi level – Nordic NTC optimization

- Objective function:
 - Maximize the volume of the NTC-domain
- Constraints:
 - Max allowed flow on each CNE is lower than the RAM
 - Max export for each BZ is larger than the base case export
 - Max import for each BZ is larger than the base case import



Examples of NTC-optimization BZs

