The Nordic Capacity Calculation Methodology (CCM) project

CCM Stakeholder Forum – Stockholm

19 April 2017

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Agenda

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2. Welcome, objective and agenda (9.30 - 9.45)
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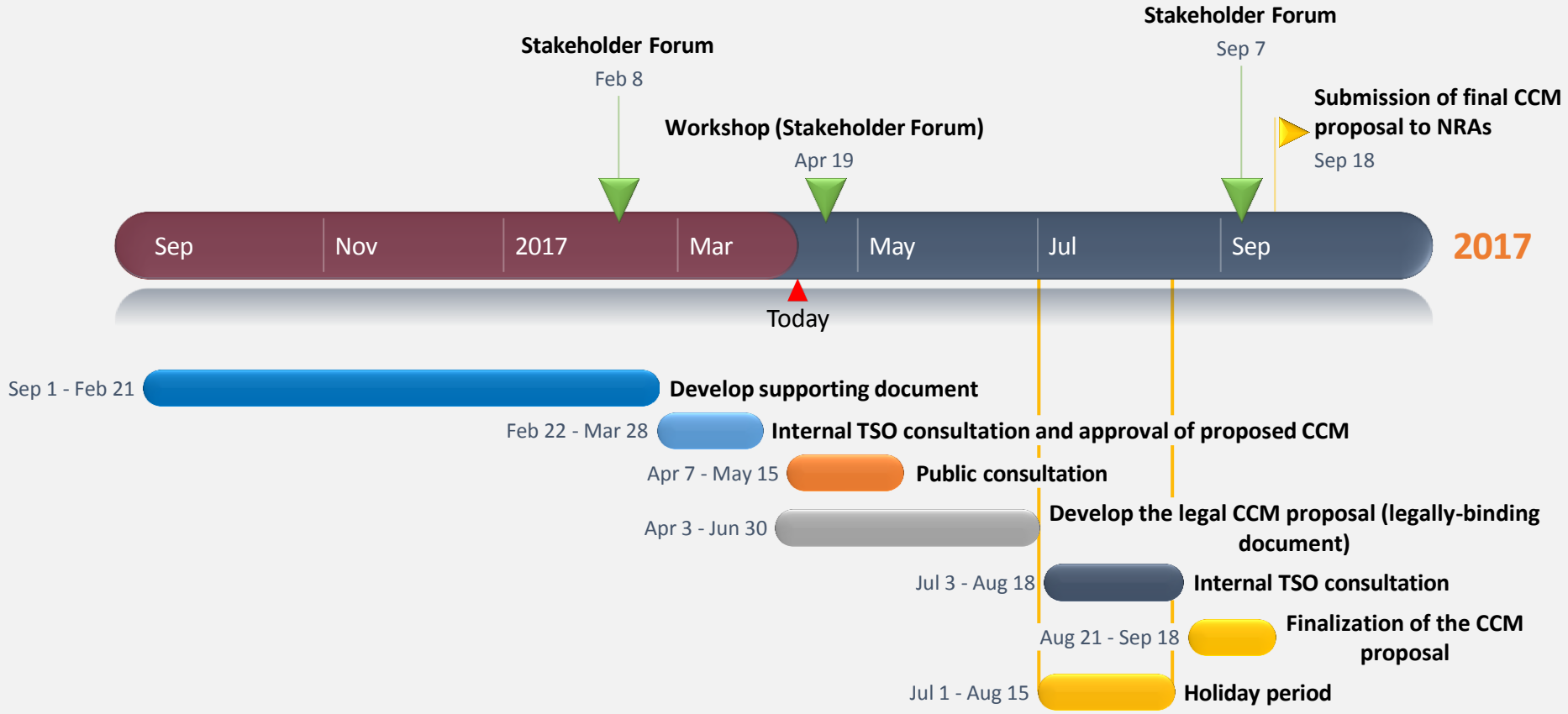
Timeline consultation process



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Level 1 structure (Chapters)

1. Introduction and executive summary
2. Legal requirements and their interpretation
3. Introduction to Flow based and CNTC methodologies
4. ACER recommendation on Capacity Calculation
5. DA Capacity calculation methodology
6. ID Capacity calculation methodology
7. Input parameters to the capacity calculation
8. Methodology for the validation of cross-zonal capacity
9. Fallbacks
10. Impact assessment
11. Timescale for the CCM implementation

Not – CACM obligation

CACM Methodology

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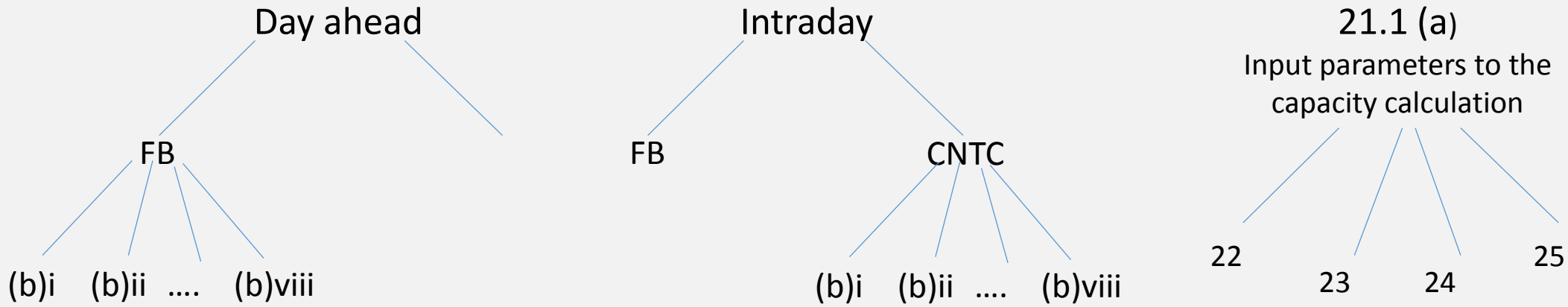
Cha. 5-7: CCM proposal

- Approach: we would like to make it easy for the reader to read the proposal against the CACM in order for them to see a clear link between the CACM tasks and our response
- Challenge: the proposal shall operate with more dimensions which had to be structured in some way:
  - ✓ Day ahead vs intraday - FB vs. CNTC - CACM article 21.1 (a) vs. 21.1 (b)



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CCM proposal, day ahead FB as an example

Day ahead – level 1

Flow based – level 2

CACM 21.1 (b)i-vii – level 3

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Consultation questions

- Please state any remarks or concerns with regard to the input data for the Capacity Calculation Methodologies (CCMs), either being CNTC or Flow Based (FB), as described in chapter 7.
- Please state any remarks or concerns with regard to the Flow-Based (FB) CCM as described in chapter 5 and 6.
- Please state any remarks or concerns with regard to the CNTC CCM as described in chapter 6.
- Do you agree with the proposal for a Flow-Based (FB) capacity calculation for the day-ahead timeframe? Please state reasons why.
- Do you agree with the proposal for a CNTC capacity calculation for the intraday timeframe as a first step of the ID CCM implementation? Please state reasons why.
- Do you agree with the proposal for a Flow-Based (FB) capacity calculation for the intraday timeframe as the final step of the ID CCM implementation? Please state reasons why.
- Please state any remarks or concerns with regard to the implementation timeline in chapter 11.
- Please state any remarks or concerns with regard to the impact assessment as described in chapter 10.
- Please state any remarks or concerns to what extent the CCM proposal meets the objectives in Article 3 of the CACM.
- If you wish to give other relevant remarks please state these here.

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Consultation website

Capacity Calculation Methodology Proposal for the Nordic CCR

Overview

This consultation concerns the regional TSO proposal for the Capacity Calculation Methodology for the Nordic CCR, in accordance with Article 20 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management. This proposal covers the Capacity Calculation Methodology for both the Day-ahead and Intraday timeframes for the Nordic CCR.

Closes 15 May 2017
Opened 7 Apr 2017

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Why We Are Consulting

We are seeking input from stakeholders, market participants, and NEMOs on this important fundament of the future European electricity market. TSOs of the CCR Nordic Region (Energinet.dk, Svenska Kraftnät, Fingrid Oyj, and Statnett SF) are initiating this open on-line consultation for a period of one and a half month. The proposal is subject to consultation in accordance with Article 12 of the Commission Regulation (EU) No 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management (CACM).

Give Us Your Views

Online Survey ›

Events

Nordic TSO Stakeholder Forum on the Nordic CCM (Capacity Calculation Methodology)

From 19 Apr 2017 at 09:00 to 19 Apr 2017 at 16:30 Add to my Calendar (.ics)

► More information

Related

Stakeholder consultation document and Impact Assessment for the Capacity Calculation Methodology Proposal for the Nordic CCR

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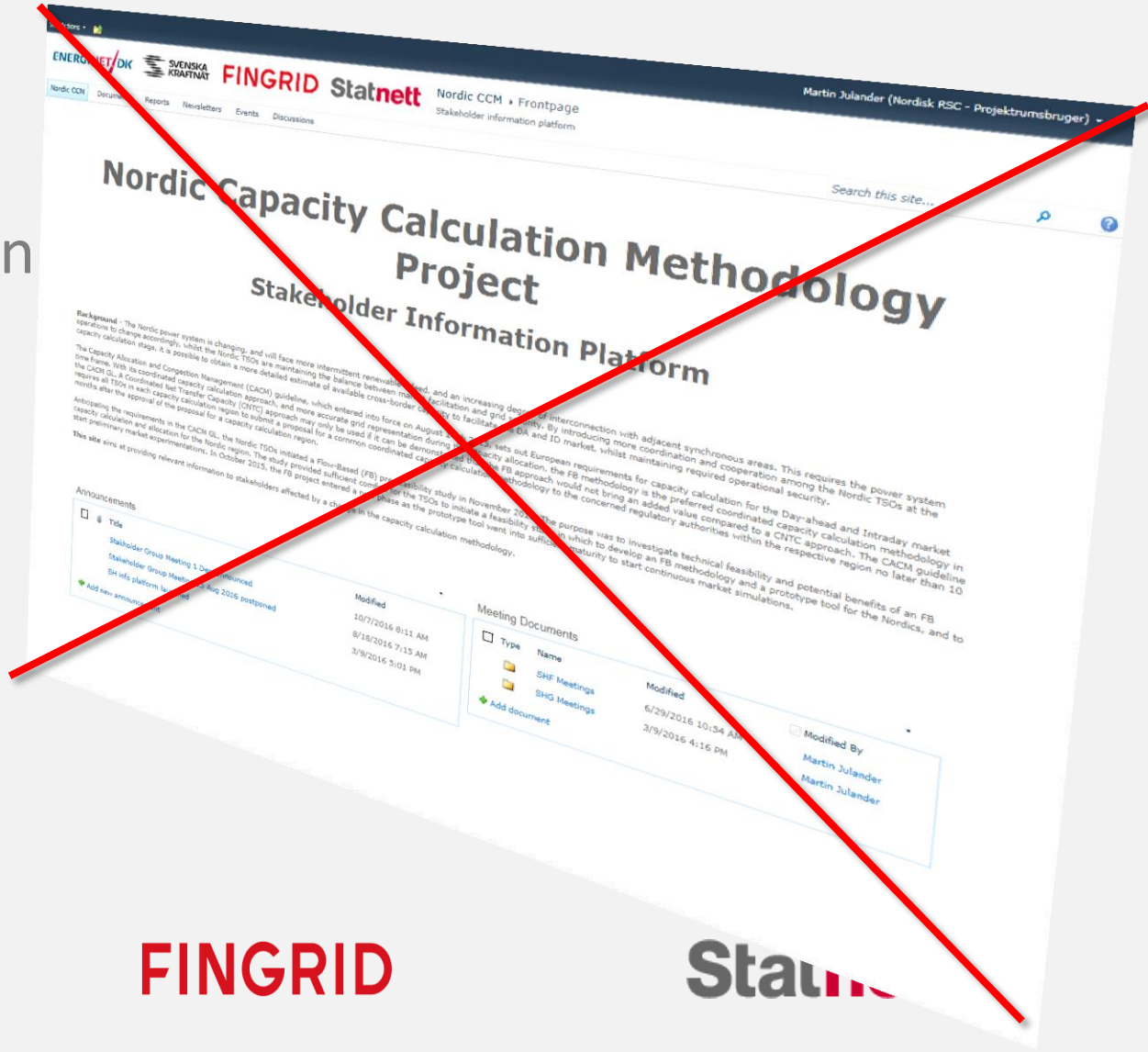
Version 1.0 Decommissioned

- Closed due to technical issues
- Registered users will not be transferred (no user registration on new site)



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New version

- Hosted under Nordic RSC web
- No user registration – public
- First batch of simulation results available
- More functionality under development
  - Document sharing
  - Interactive Q&A

www.nordic-rsc.net/ccm

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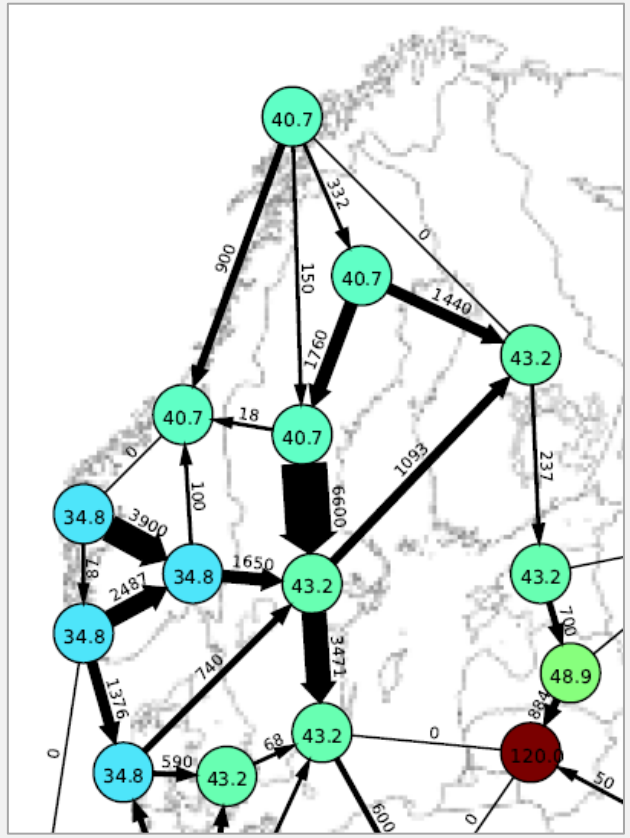
Prototype flow-based capacity calculation and market simulations

- The Nordic CCM project have developed a set of prototype tools for coordinated capacity calculation
  - ✓ We are currently calculating flow-based parameters, and doing market simulations
  - ✓ The CCM consultation document contains documentation on results for 17 weeks in 2016
- Data quality remains an issue
  - ✓ Mostly related to the prototype common grid model which is created specifically for this use
  - ✓ Quality will improve the real common grid model is in place



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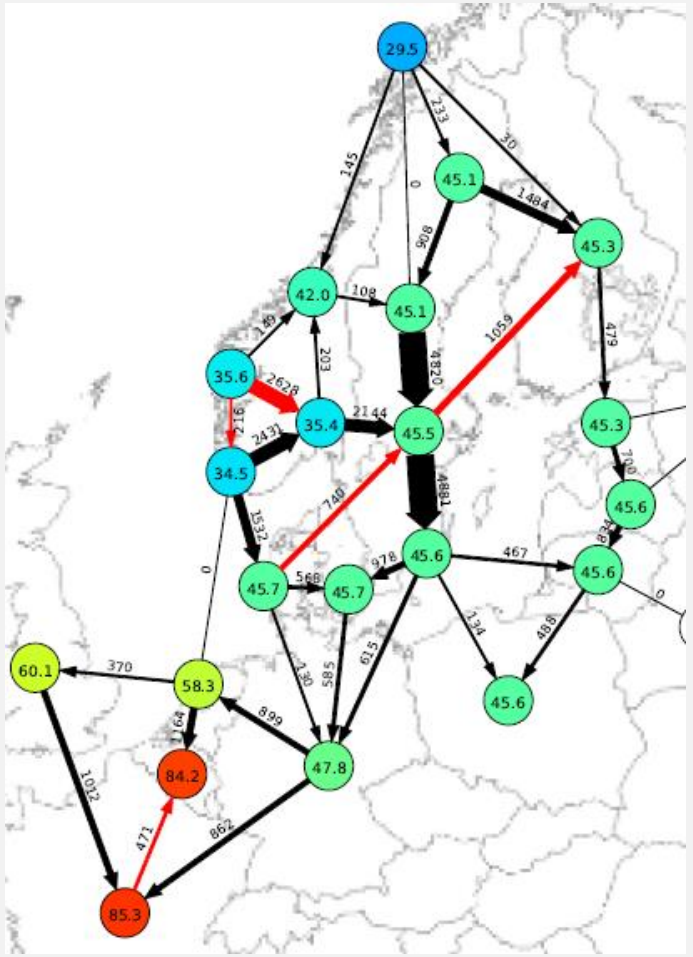
Simulation set-up

- The market simulations are done in the European Power Exchanges' Simulation Facility by using historical order books
- Market simulations are conducted using the same algorithm and bid lists used for the day-ahead market
- The geographic scope is limited to Northern Europe
- NTC simulations are performed with the same set up as a reference, using the official NTC values (these NTC results may deviate from the official results)
- The FB calculation is in general made to be comparable to the NTC process (TRMs included instead of FRMs, same grid constraints considered)



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Disclaimers

- Prototype tools/process
  - ✓ Prototype tools have been used for the simulations
  - ✓ Flow Reliability Margins (FRM) are not included
  - ✓ Some known difficulties with the Danish CNE definitions in the first half of 2016 (determined to have a minor impact on the results)
  - ✓ Although operators are consulted in the review stage, they are not personally involved in the FB capacity calculation process yet
  - ✓ Some of the hours (~6 %) in the FB results lacks FB parameters → these hours are replaced with NTC values
- Prototype Common grid model
  - ✓ The grid models used are not yet the target models. Indeed those are in the process of being implemented. The quality of the grid models is the best we can have at this moment in time; they do not allow for dynamic analysis and detailed voltage/reactive power analysis though.
  - ✓ Merging software for creating the CGM from the IGMs evolves over time. Improvements made for the later weeks have not been applied for the earlier ones
- Market simulations
  - ✓ The production and consumption bids are as provided historically to the day-ahead market. This means that any changes in bid acceptance in FB has no impact on bids submitted for following days. This could be especially important for the hydro producers with storage.

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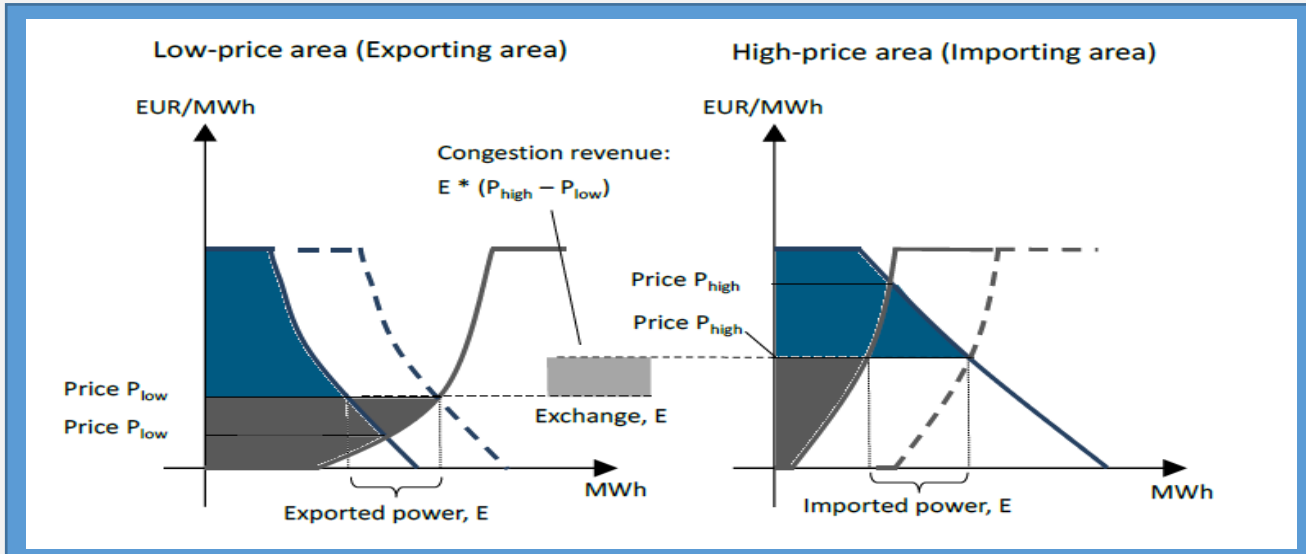
Objective function of the price coupling

❖Same price coupling algorithm in both FB and NTC

✓MAX Welfare = Consumer surplus + Producer surplus + Congestion revenue



Example of an exchange from a low price area to a high price area

✓Subject to constraints

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Contents of the published results

- **One set of results (4 files) for each week**

- **areas.csv:** All results for the bidding zones (FB and NTC)
  - ✓ Buy and sell volumes (curve, complex, noncurve)
  - ✓ Consumer and producer surplus
  - ✓ Price
  - ✓ Congestion rent (50 % of rent on all bidding zone borders)

- **borders.csv:** All results for the bidding zone borders (FB and NTC)
  - ✓ Flow on import and export side
  - ✓ Losses
  - ✓ Price difference
  - ✓ Congestion rent (flow * price difference)
  - ✓ Shadow price for capacity and ramping (NTC only)
  - ✓ Estimated resulting phisical flow calculated from PTDFs (Nordic borders only in NTC results)

- **cnes.csv:** All information on the FB parameters (FB and NTC)
  - ✓ MW limit on grid constraints
  - ✓ PTDFs
  - ✓ Flow in base case (Fref)
  - ✓ Fref' (estimated flow when all bidding zones have zero net position)
  - ✓ FAV (adjustment of the MW limit due to remedial actions etc.)
  - ✓ RAM (MW limit – FAV – Fref')
  - ✓ Max and min flow on CNE allowed in FB and NTC
  - ✓ Estimeted flow from market result (NP*PTDFs + Fref')
  - ✓ Shadow price (FB only)
  - ✓ Overload in FB and NTC market results
  - ✓ AAF (NP*PTDFs)
  - ✓ Available margin (RAM + Fref')

- **missing_hours.csv:** List of hours with missing FB parameters, when the NTC parameters were used instead

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Comment to the data

- cnes.csv also include the PTDFs for the bidding zone borders, even when these are not relevant for the market

- Other grid constraints are anonymized

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How to access the data: demonstration

- <will insert demo files here to be opened during the presentation>

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