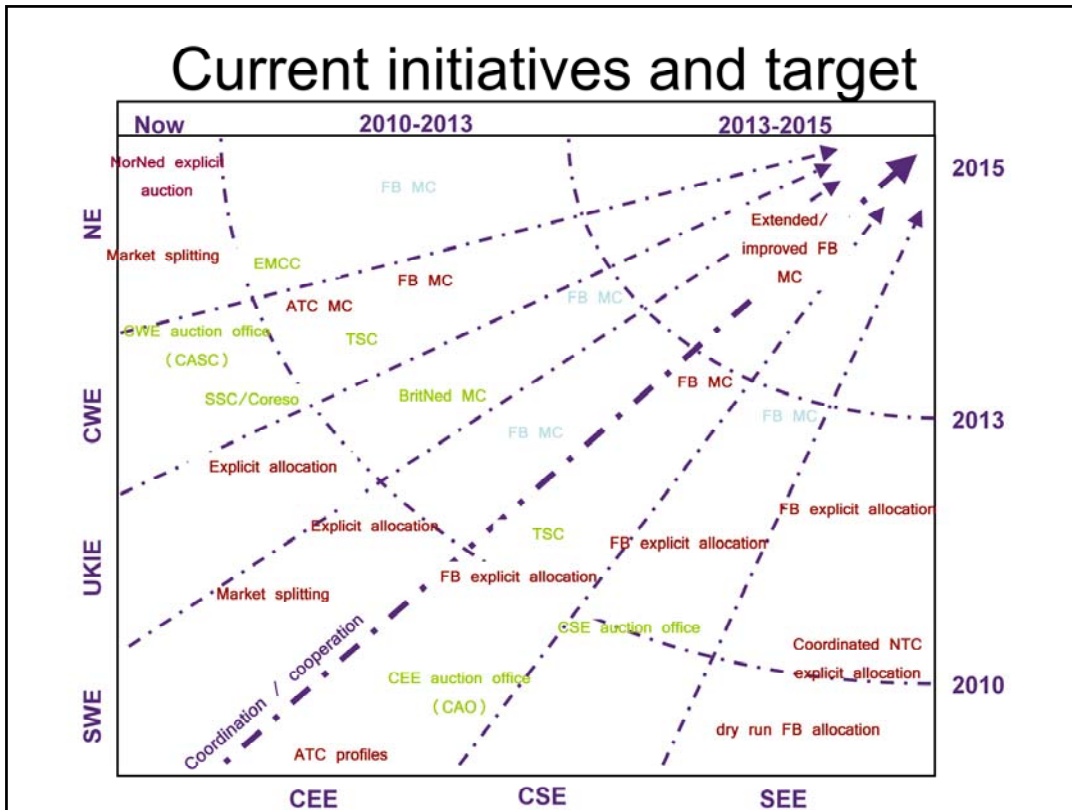


Annex 5
7 October 2009

**Workstream Capacity Calculation
Proposal for Target Model and Roadmap**

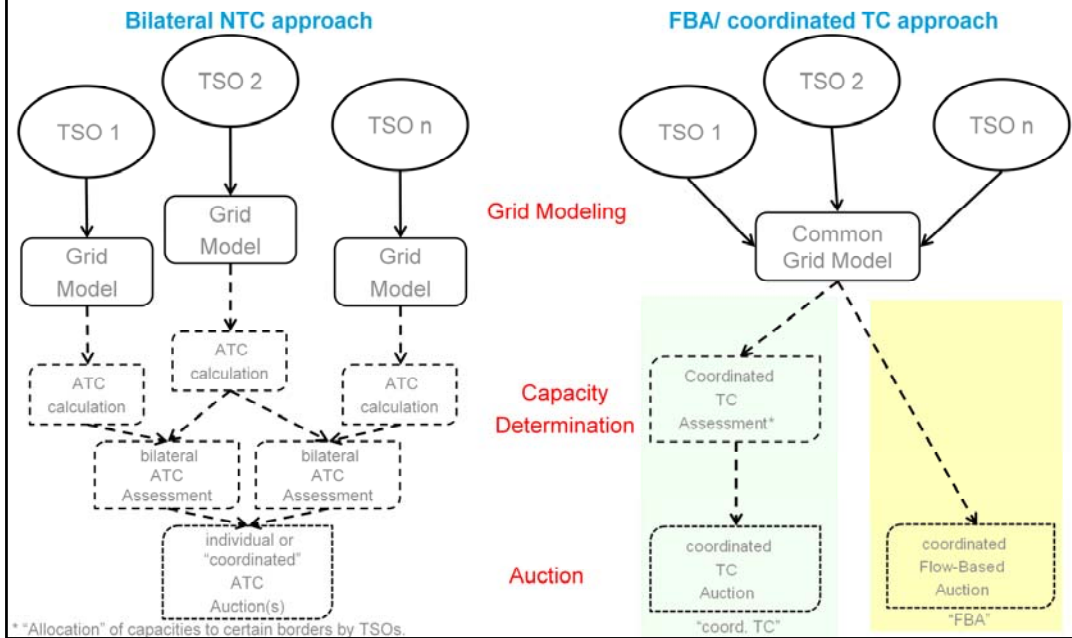
Objectives of CC

- Having harmonised coordinated capacity calculation methodologies amongst European TSOs.
- Having harmonised standards regarding necessary information and information exchange amongst TSOs, Genco's and Traders.
- Providing for each time horizon the max. possible capacities to the market by respecting TSOs security standards.



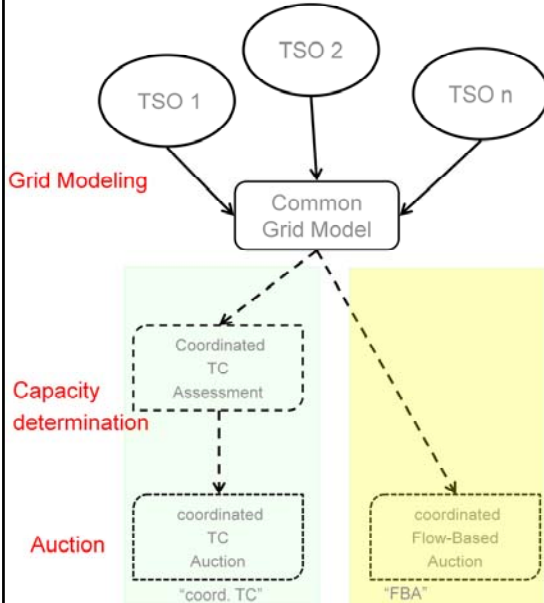
In these slides MC means Price Coupling.

Main difference between bilateral NTC approach and FBA/coordinated TC approach



FBA vs. coordinated TC approach

FBA/ coordinated TC approach



- Both approaches rely on the same principles:
 - Deep coordination amongst TSOs
 - Common Grid Models for capacity assessment
- Main differences:
 - Within the coordinated ATC case, TSOs have to assess where (which border) to put the available capacities. Hence, market assumptions have to be made by TSOs without knowing the markets preference. As an example the 'enhanced NTC' method (ETSO/EuropeX).
 - Within the FBA approach, the market determines at the time of allocation where to use the available capacities.
 - The FBA approach provides better transparency.

CC: increased level of coordination and details

- Increased level of coordination/cooperation
 - Establishment of a European-wide common grid model (EU-CGM), consisting of the same level of information
 - Coordinated RM (reliability assessment) based on the EU-CGM
 - Coordinated security analysis (capacity assessment) based on the EU-CGM
 - Coordinated curative redispatch measures based on a EU-CGM
- Increased level of detail
 - 24 hour base cases for D capacity calculation
 - ATC → FB
 - Regional → pan EU
 - 'Country zones' → different/cross-country zones (based on market and technical condition assessment)
 - Generation locational information
- In general: the closer to real time the higher the level of detail

Target model CC WS (LT)

- Target Model for LT capacity calculation
 - Based on common and harmonised data sets
 - Harmonised approach, criteria, risk assessment
 - Based on scenarios (sharing of maintenance programs and so on)
 - NB: at this stage, it is not clear whether a FB allocation (incl. source-sink bidding possibilities) should be privileged.

Target model CC WS (DA)

- Target Model for DA capacity calculation
 - Flow based capacity determination:**
 - 24 hour base cases (EU-CGM)
 - Harmonised D-2CF
 - Detailed and harmonised assumptions on GSKs
 - Detailed and harmonised assumptions on wind production (e.g. WSKs)
 - Harmonised treatment and assessment of FRMs
 - Harmonised treatment of critical branches (e.g. handling of critical branches and critical outages)

D-2CF is D-2 ahead congestion forecast

GSK is generation shift key

WSK is wind shift key

Target model CC WS (ID)

- Target Model for ID capacity calculation
 - Flow based capacity determination:**
 - Based on common and harmonised data sets (merged snap shots (control room data), updated forecast data, HACF, IDCF models)
 - Latest information on load, generation wind, topology
 - Harmonised approach and treatment of critical branches (e.g. handling of critical branches and critical outages)

HACF is hourly ahead capacity forecasts

Issues to be discussed and further analysed

- Discussion on base cases
- Discussion linked with GSK
 - Size of zones
 - Underlying model (GSK in combination with D-2CF, shadow market model, security constrained unit commitment) and implication for the role of the TSOs/NRAs
- Preventive redispatching (for maximising the global social welfare)
 - + Proactive maximisation of the global social welfare by taking into account redispatch measures (and costs) at the allocation process
 - ex-ante definition of cost expenditures has to be agreed on
- (dynamic*) cross-country zonal / nodal models
 - + further maximisation of social welfare independent of political borders
 - existing market structure (e.g. involvement of local PX) needs to be investigate

* changing the size of zones according to markets need

Criteria to be taken into account for CC

- social welfare
- Level of commercial capacities
- Effective network use
- Redispatching actions & costs
- Feasibility of the point of allocation (also called starting point of the allocation process) and the number of “pre-congested cases”
- System security and in particular the compliance with N-1 security rule (e.g.: # of hours of non-compliance)
- Quality of expected system conditions and in particular on applied GSK (comparison with observed values,...)
- ...

Roadmap

	Description	2010	2011	2012	2013	2014	2015
Stage 1	Harmonise definitions of CGM (e.g. D-2CF)						
Stage 2	Establish the CGM						
Stage 3	Improve coordination between TSOs at the regional and cross-regional level	TSC, Coreso, SSC					
Stage 4	Curative coordinated redispatch						
Stage 5	Interregional capacity assessment						
Stage 6	Parallel run						
Target model (for D-1)	Interregional (extended) flow based MC		CWE FBMC***		CEE FBMC*		eFBMC**

* Assumption

** Or coordinated ATC if appropriate

*** target: end of 2010

Annex: EU-CGM for DA

- Base case assumptions
 - Load information
 - Exchange programs information
 - Expected generation information
 - Expected wind information
 - Grid topology, technical grid constraints
 - D-2CF
 - EU-CGM

Common capacity assessment:

- GSK information
- WSK (Wind Shift Keys) information
- Critical branches/ critical outage information based on TSO experience
- Capacity available to the market (e.g.: AMF+/- ; PTDF Factors)