Capacity Allocation & Congestion Management
Capacity Calculation and Bidding Zone Delimitation

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National Grid

Capacity Calculation

- Determines the amount of interconnector capacity available to the market

  - Takes into account interactions between interconnectors

  - Covers the whole European power system

  - Co-ordinated between TSOs

- Run at D-2 for Day Ahead Capacity Allocation

- Implementation ~2014 most likely at a regional level

- At the core of the process is the Common Grid Model (CGM)

Common Grid Model

- Each TSO provides a two day ahead model of their network

- These are merged to form the Common Grid Model

- Model contains

  - Network data

  - Demands

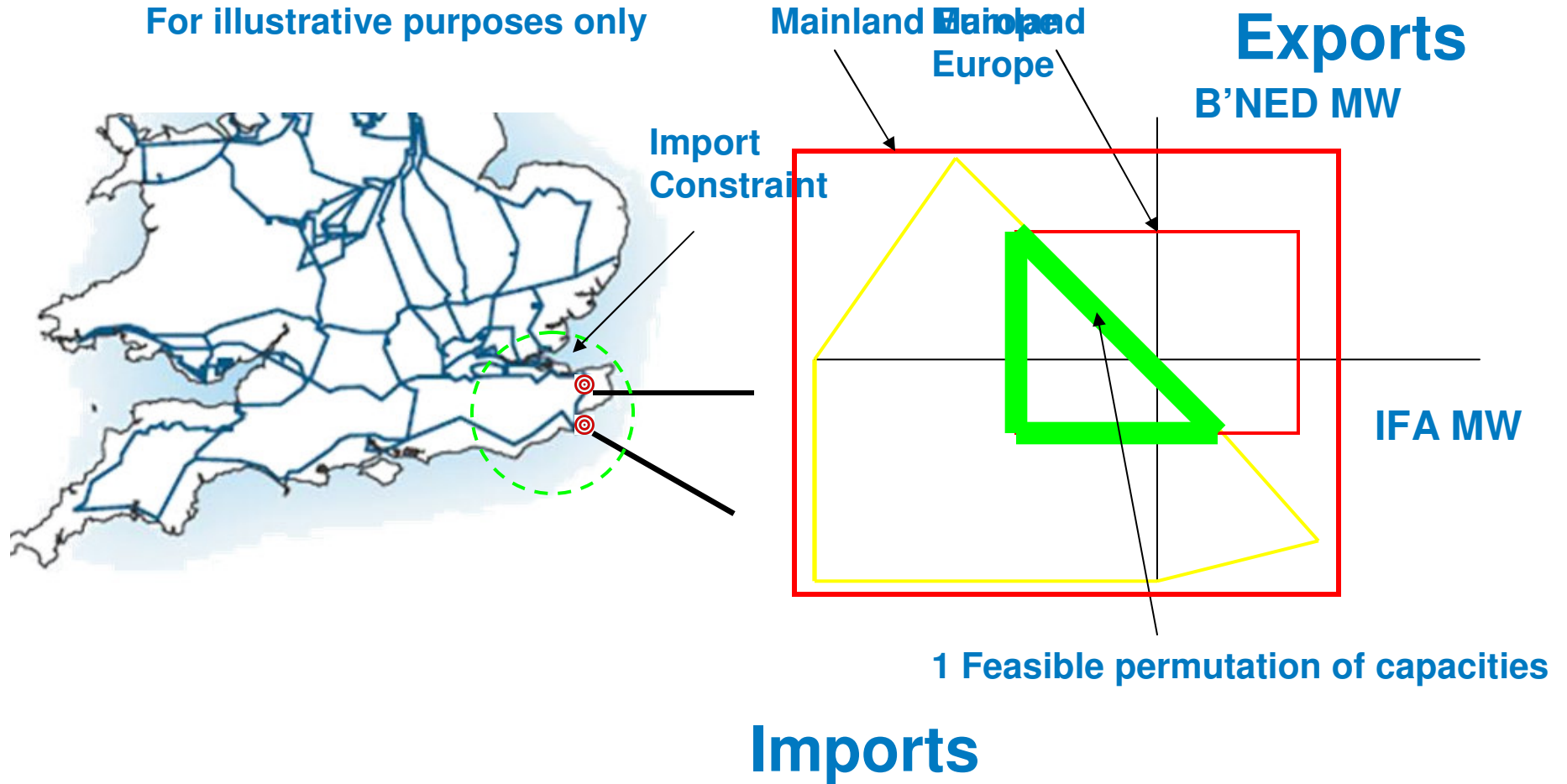 - Generator data

Common Grid Model
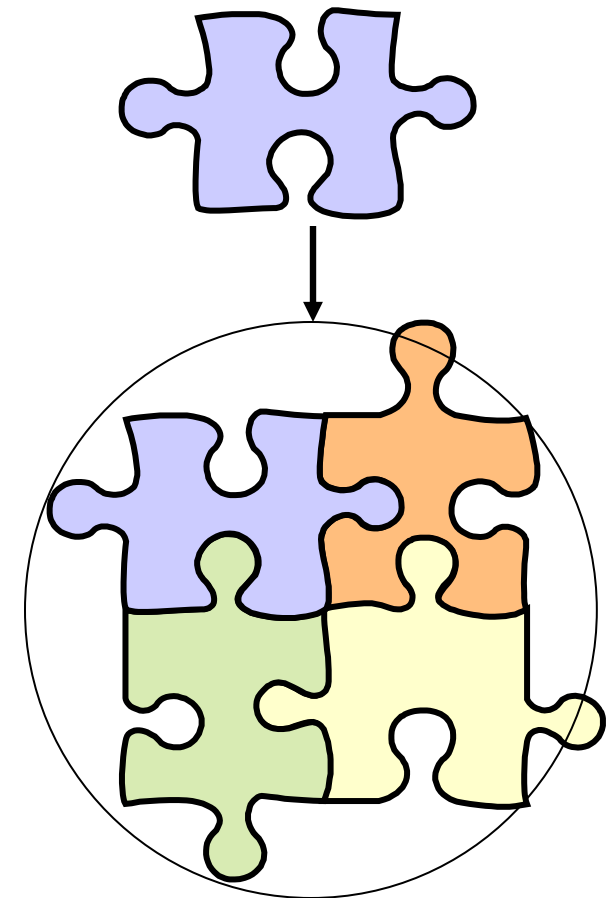
Speaker notes

- For the Day Ahead allocation of capacity, the data will be required by 19.00 hours D-2.

- The objective is to create a Common Grid Model for the whole European power system but initially is likely to be run at a Regional level. The North Western European region is expected to be the first region to use the CGM.

- The capacity calculation will be run overnight after the CGM has been calculated.

- The ensemble of feasible interconnector capacities will be made available to the Day Ahead Market

Example of Capacity Calculation

For illustrative purposes only

Mainland Europe

Europe

Exports

B'NED MW

Import Constraint

IFA MW

1 Feasible permutation of capacities

Imports

Speaker notes

- This example assumes an extreme scenario in which there is an import constraint in the SE due to low generator availability; the capacity calculation shows that, from the GB perspective, power cannot be exported to Holland and France simultaneously without breaching GB security standards. The feasible combinations of capacity lie within the yellow boundary.

- The red boundary shows, (for one combination of interconnector capacities between countries on the mainland), the feasible combinations of capacity on Britned and IFA from a mainland perspective.

- The green boundary shows combinations of IFA and Britned capacity which are feasible from both perspectives and can therefore be released to the market.

Speaker notes cont…

- The European grid is highly interactive, hence for each combination of capacities between countries on the mainland there will be a different set of feasible capacities on Britned and IFA, ie the red and green boundaries will change in shape and size.

- All feasible permutations of Britned, IFA and mainland interconnector capacities will be released to the market for allocation using the price coupling algorithm

Data from Generators

- Technical data as required by Grid Code

- Commercial data to be provided at D-2

  - Availability data

  - Physical notification

  - Bid Offer data

  - Dynamic data

To create a generation merit order

Speaker notes

- In GB the Grid Code requires operational and planning data from generators whose output is deemed to have a significant effect on the operation of the transmission system.

- This enables the power system to be modelled accurately for operational purposes. The capacity calculation will require a similar level of accuracy, hence the requirement for generators to provide data for the CC will be very similar to the Grid Code requirements

Speaker notes

- There is coherence between the Grid Code obligations placed on Generators to provide data according to their significance (to the planning and operation of the transmission system) and those in the RfG Network Code. However in order to model the GB system in the Capacity Calculation it may not be necessary for all Generators of a particular Type (as defined in the RfG Network Code) to provide data.

- It will be unlikely that a generator will switch in and out of significance but in any case, the change process would be set out through standard industry governance

Generators Required to Provide Data

- Within 6 months of Code coming into force, TSOs consult with Stakeholders on proposals

- For example all transmission connected generators + embedded generation which the TSO deems to be significant (ref Grid Code)

- Proposals will be submitted to NRAs for approval

- NRAs decision within 3 months

- Within 2 months

- TSOs will publish

  - A list of parties required to provide information; and
  - A list of information to be provided.

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Speaker notes

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■ This enables the power system to be modelled accurately for operational purposes. The capacity calculation will require a similar level of accuracy, hence the requirement for generators to provide data for the CC will be very similar to the Grid Code requirements

Issues over "Significance"

- JESG captured issues from February 2012

- Different interpretation of "significant" across the Network Codes

- Can a generator potentially switch in and out of significance if the TSO decides

Speaker notes

- The definition of significance has been compared with the RfG Network Code which is fairly similar. However, there are elements which do not need to be applied to CACM such as classes of generators

- It will be unlikely that a generator will switch in and out of significance but in any case, the change process would be set out through standard industry governance

Generator Data; Stakeholder Feedback

- Data is confidential

- Generators cannot be held liable or accountable for any changes post submission; information provided on a best estimate basis

- Cost of provision must not be prohibitive, ideally from existing sources

- Information provided should be the same for all 'Significant' generation

- Capacity Calculation Drafting Team is considering this feedback

Bidding Zone Delimitation

- Internal congestion within a bidding zone adversely affects market efficiency; resolvable by dividing zone along congestion boundary(s)

- Where the congestion between bidding zones is insignificant, merger is a possibility

- CACM Code proposes a two-step approach to review bidding zone delimitation:

  - (1) Biannual report on current bidding zone efficiency to determine whether a regional process for bidding zone configuration is required

    - compiled by NRA and ACER

  - (2) A regional process to identify new bidding zone configurations

    - proposed by TSOs, validated by NRAs, and including public consultations

Bidding Zone Delimitation

- Factors to be considered in determining Bidding Zone Efficiency include

  - Congestion severity location and frequency, planned investments to alleviate (grid and generation)

  - Impact on liquidity and competition

  - Correctness of price signals

  - Security of supply, and operational security

  - Impact on balancing mechanism

  - Cost of change to new zone configuration for TSOs & market participants.