

EURELECTRIC presentation

***EURELECTRIC contribution to a reference
model for European capacity markets***

DG COMP workshop 30 June 2015

EURELECTRIC believes that energy, flexibility and capacity are all needed in a future-proof wholesale market design

	Energy	Flexibility	Capacity
Goal	Efficient dispatch	Short term system adequacy	Long term system adequacy
What it does	Delivers energy in the most cost-efficient way by having the market define the system's merit order	Enables the system to respond to short-term variations in the supply/demand balance	Ensures long-term system adequacy e.g., in the case of extreme load peaks or backup intermittent renewable generation
Market instruments	Forward, day-ahead and intraday markets	Day ahead, intraday and balancing markets, ancillary services	Market-based capacity remuneration mechanisms
Where we are today	Ongoing energy market integration with market coupling and cross border intra-day markets (although taking too long)	Energy market integration and cross-border balancing ongoing, grid related services to be developed	Rather separate CRM national initiatives, with an increasing discussion on cross-border participation

EURELECTRIC has established a view on the fundamental design features for the implementation of capacity markets

Description

	Description
Goal	<ul style="list-style-type: none"> Overarching goal must be generation adequacy (i.e., firm capacity without any other political targets)
Product	<ul style="list-style-type: none"> Remunerate plant availability/firm capacity
Design features	<ul style="list-style-type: none"> Market-based Technology neutral Open to new/existing plants Open to generation/demand response/storage
Geography	<ul style="list-style-type: none"> Open to cross-border participation, while not distorting the energy market

The **completion of the IEM** and coordination of the key elements of market design are **crucial** for EU energy policy

Regional capacity markets require the definition and harmonisation of a set of fundamental elements

- Common **regional adequacy assessments**
- **Determination of the capacity needs** (volume regulation) should follow a **homogeneous and transparent methodology**
- **Similar product definition** to enhance cross-border participation
- Not contracted capacity providers should have the **right to free exit** from the market
- **Product details** must be well defined so that the goals of the capacity market are efficiently met: in particular the tenure (**duration**) and the **lead time** have to be **consistent with long-term investments**
- **Penalty regimes** should ensure that capacity providers have **incentives to deliver appropriate firmness and** be established according to **common principles**
- **TSO coordination requirements** to verify availability **should be clear**

Cross-border participation in capacity markets is crucial and an adequate model should be followed

Which product?

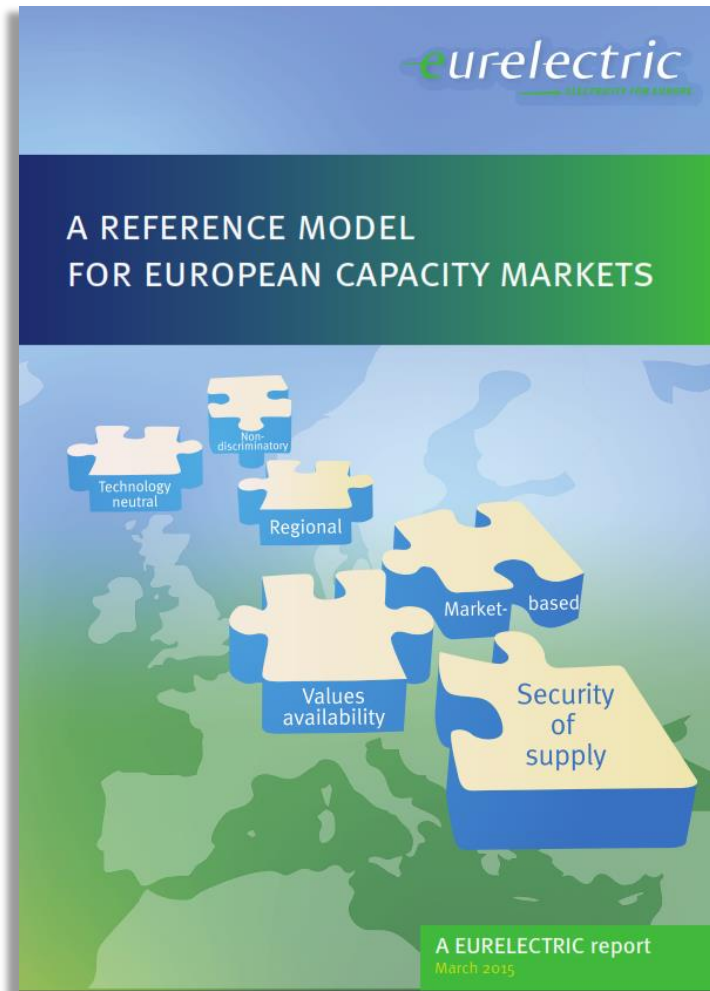
		Availability	Delivery
Who participates?	Capacity provider	<p>A</p> <ul style="list-style-type: none"> Capacity providers sell their capacity cross-border. They would be responsible only for being available in scarcity situations. 	<p>B</p> <ul style="list-style-type: none"> Capacity providers sell their capacity cross-border. They would be responsible for being available in scarcity situations <u>and</u> that electricity flows from its own bidding zone cross-border to the zone where capacity has been sold.
	Interconnector	<p>C</p> <ul style="list-style-type: none"> Interconnector sells capacity cross-border. It would be responsible only for being available in scarcity situations. (In this case, the interconnector on its turn would probably contract “back to back” availability with market actors in the “export” market). 	<p>D</p> <ul style="list-style-type: none"> Interconnector sells capacity cross-border. It would be responsible for being available in scarcity situations <u>and</u> that electricity flows cross-border to the zone where capacity has been sold.

- **EURELECTRIC** prefers capacity provider selling availability where the interconnector gets paid for the “congestion rent” - **A**
- **Delivery as product are not suitable** as they have the potential to distort the energy market by forcing delivery of energy that could otherwise be out of the merit order - **B** & **D**
- **Interconnectors should not participate** in competition with market participants - **C**

A set of key principles for cross-border participation in capacity markets should be verified

- **Common requirements and coherent market rules** for all capacity market participants (e.g. certification, penalty regime, availability requirement, etc.);
- **Participation with the same capacity in more than one capacity market** for obligations in the same contract timeframe **should not be possible** (no double commitment and earnings);
- **TSOs should offer a certain amount of cross-border participation** based on non-discriminatory conditions and only limited by objective physical limitations (to be approved by National Regulatory Authorities and ACER);
- **TSOs should not be allowed to neglect existing cross border capacity** contracts in stress situations, needing amendments to Network Code Emergency and Restoration;
- **No reservation of cross-border capacity** should be introduced in order not to interfere with the functioning of the forward, day-ahead, intra-day and balancing markets, which will determine the actual direction of the energy flow.

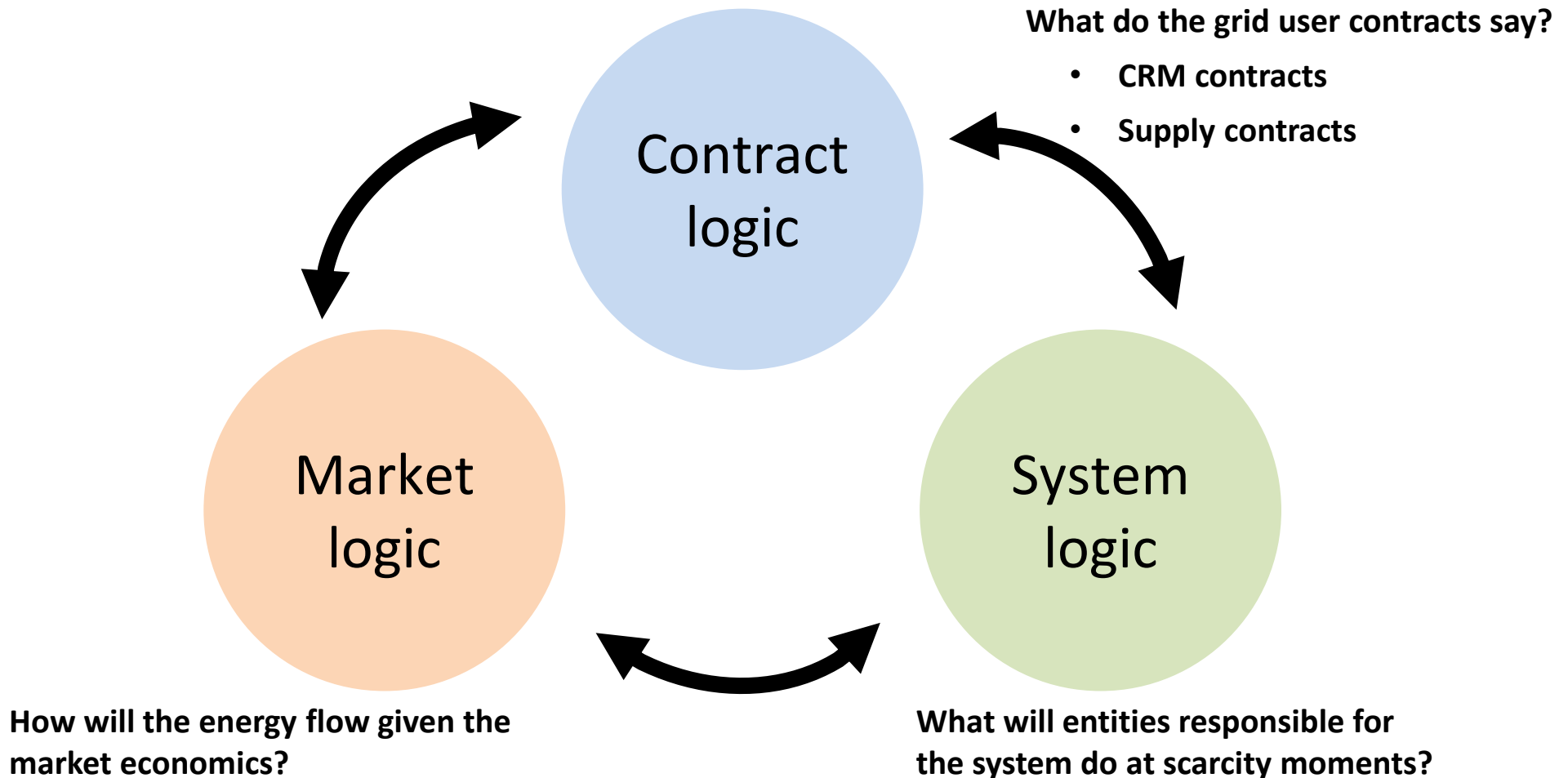
The EURELECTRIC views on a reference model for European capacity markets are published



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When considering cross-border participation, different logics are at play in moments of simultaneous system stress in two zones



Simplified example

EOM

- Gen = 9700 MW
- DSR = 200 MW
- Max Load = 10000 MW
- 20 hours scarcity / yr

CRM

- Gen = 9800 MW
- DSR = 200 MW
- Max Load = 10000 MW
- 0 hours scarcity / yr

Further simplified assumptions:

- Both markets peak periods are perfectly synchronous
- Marginal plants are identical in both markets, e.g. 100€/MWh variable cost (similar technologies)
- Price cap is (commonly) 3000€/MWh
- 20 hours/Y scarcity rent @3000€/MWh sufficient to invest in peak plants
- CRM value in CRM market = 60k€/MW/Y
- Isolated markets

Situation at 19900 MW common load

EOM

- Gen = 9700 MW
- DSR = 200 MW
- Load = 9950 MW
- Market price = 100 €/MWh

50 MW



CRM

- Gen = 9800 MW
- DSR = 200 MW
- Load = 9950 MW
- Market price = 100 €/MWh

Assumption: 100 MW cross-border capacity

Outcome: Although the EOM counted on 20 hours scarcity (in the isolated case), it is now reduced due to the help from **(or free riding on)** the CRM market → investors would see less scarcity, and some peak plants will be pushed out the EOM market until the right equilibrium is reached

Situation at 19902 MW common load → 2MW curtailment

EOM

- Gen = 9700 MW
- DSR = 200 MW
- Served Load = 9949 MW (2MW curtailed)
- Market price = 3000 €/MWh

49 MW



CRM

- Gen = 9800 MW
- DSR = 200 MW
- Load = 9951 MW
- Market price = 3000 €/MWh

- **Market logic** (outcome of market coupling)
 - 2 MW are not supplied in EOM
 - Both markets clear at 3000€/MWh → scarcity rent in CRM market, **this will lead to a lower CRM value over time, but peak prices might not be acceptable in the CRM market**
- **Contract logic:** ok
- **System logic:** ok

Cross-border CRM: simplified example

EOM

- Gen = 9800 MW, but 100 MW are contracted by the market with CRM
- DSR = 200 MW
- Max Load = 10000 MW
- 20 hours scarcity / yr

CRM

- Gen = 9700 MW
- DSR = 200 MW
- Max Load = 10000 MW
- 0 hours scarcity / yr

Further simplified assumptions:

- Both markets are perfectly synchronous
- Marginal plants are identical in both markets, e.g. 100€/MWh
- Price cap is 3000€/MWh
- 20 hours scarcity rent @3000€/MWh sufficient to invest in peak plants
- CRM value in CRM market = 60k€/MW/Y, the 100 MW plants in the EOM are also contracted at 60 k€/MW/Y (*)
- Isolated markets

(*) actually, it would be contracted via (e.g. an auction of)the interconnector, assuming the interconnector is limited to 100 MW

Situation at 19900 MW common load

EOM

- Gen = 9800 MW, but 100 MW are contracted by CRM market
- DSR = 200 MW
- Load = 9950 MW
- Market price = 100 €/MWh

50 MW



CRM

- Gen = 9700 MW
- DSR = 200 MW
- Load=9950 MW
- Market price = 100 €/MWh

Assumption: 100 MW cross-border capacity

Situation at 19902 MW common load → 2 MW to curtail

EOM

- Gen = 9800 MW, but 100 MW are contracted by CRM market
- DSR = 200 MW
- Load = 9951 MW
- Market price = 3000 €/MWh

49 MW



CRM

- Gen = 9700 MW
- DSR = 200 MW
- Load = 9951 MW
- Market price = 3000 €/MWh
- 2 MW to curtail ??

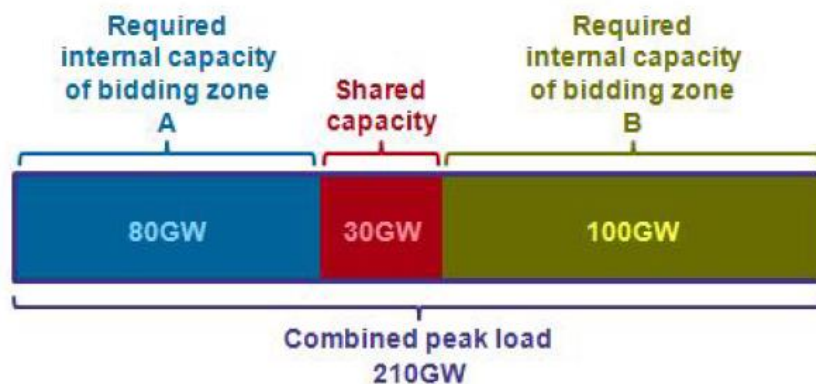
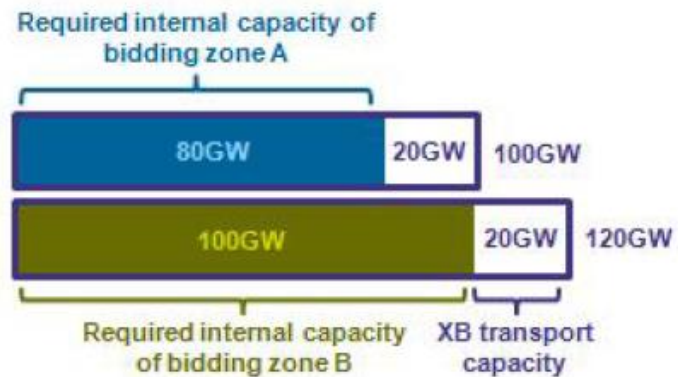
- **Market logic:** both markets clear at 3000€/MWh, but 2 MW curtailment would happen in CRM market
- **Contract logic:** to respect the CRM contract, 2 MW would be curtailed in the EOM market
- **System logic:** TSO of EOM market would not see any reason to curtail the 2 MW (there is enough installed capacity, why should he curtail in his market ?)

=> XB CRM participation requires additional rules to cope with these contradictions

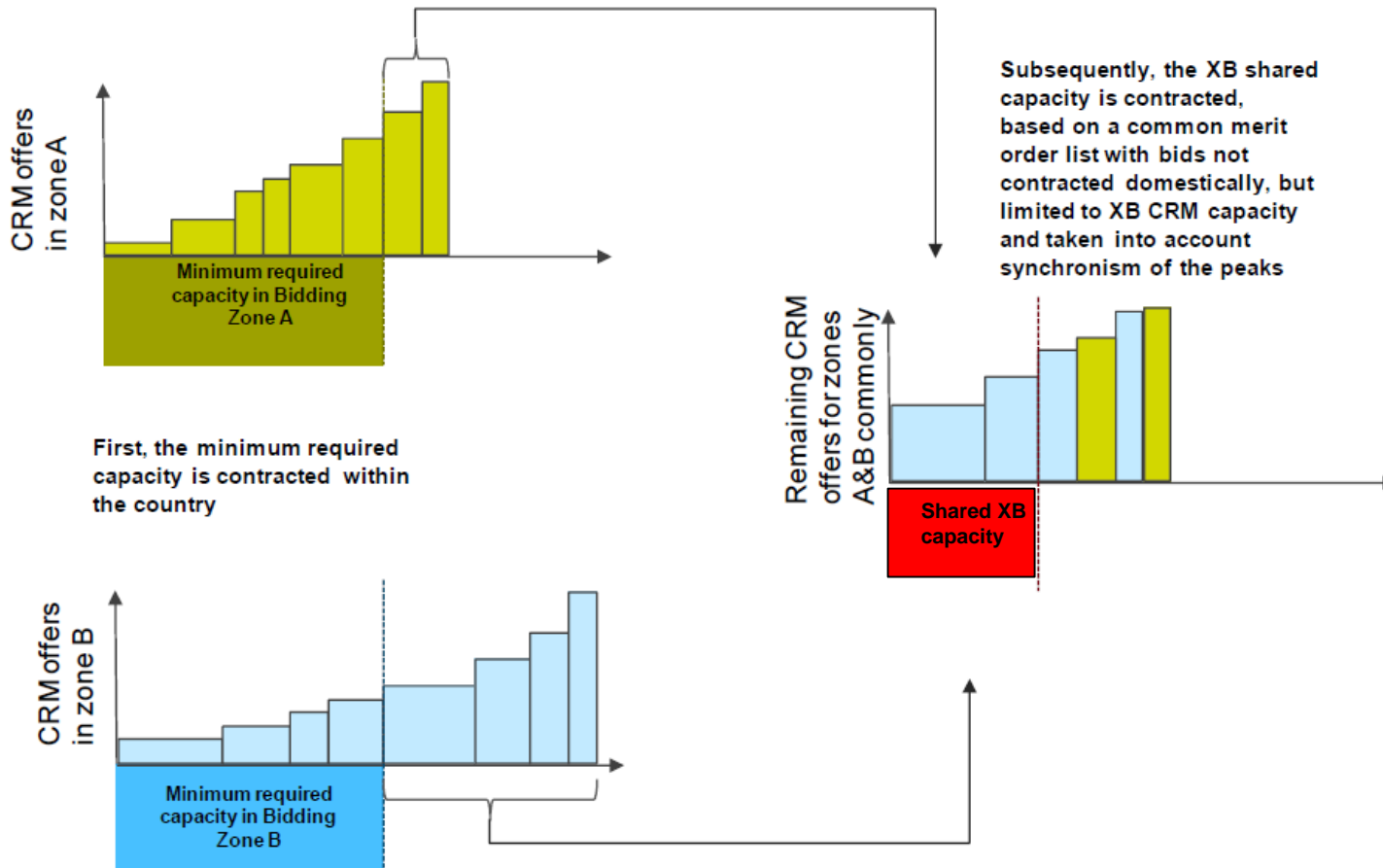
EU-wide regulation and secondary legislation should accommodate these three logics

- EU-wide regulation (e.g., through a modification of the SoS Directive) should establish that contracts (e.g. capacity market contracts) between Member States must be honoured at common moments of system stress, unless *Force Majeure* circumstances make unavoidable curtailing interconnection capacity
- This should then be further developed in secondary legislation of the third package, in particular the network codes and guidelines:
 - Capacity markets must be compatible with the Target Model (TM). The basis of the TM is that XB energy flows are determined by the price differential between neighbouring markets. Therefore, XB capacity contracts should not force energy flows that are contrary to such energy price differentials (at common system stress, prices are at the (common!) price cap).
 - CACM and Balancing Network Codes should at least harmonise price caps (different price caps might affect the XB flows)
 - Emergency and Restoration and CACM Network Codes should set the principles how capacity markets have to be integrated in the day-ahead, intraday and balancing markets and in emergency situations

Sharing cross-border capacity for adequacy



2 step auction approach



In practice, (if organised via auctions), this will be organised in 1 step