

# ***Regional resource adequacy – Cross-border trade of capacity***

***From implicit to explicit cross-border  
participation in capacity mechanisms***

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## EURELECTRIC has established a view on the fundamental principles for the implementation of CRM

### Description

#### Goal

- Overarching goal must be **generation adequacy** (i.e., firm capacity without any other political targets)

#### Product

- Remunerate **plant availability/firm capacity**

#### Design features

- **Market-based**
- **Technology neutral**
- Open to **new/existing** plants
- Open to **generation/demand response/storage**

#### Geography

- **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

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

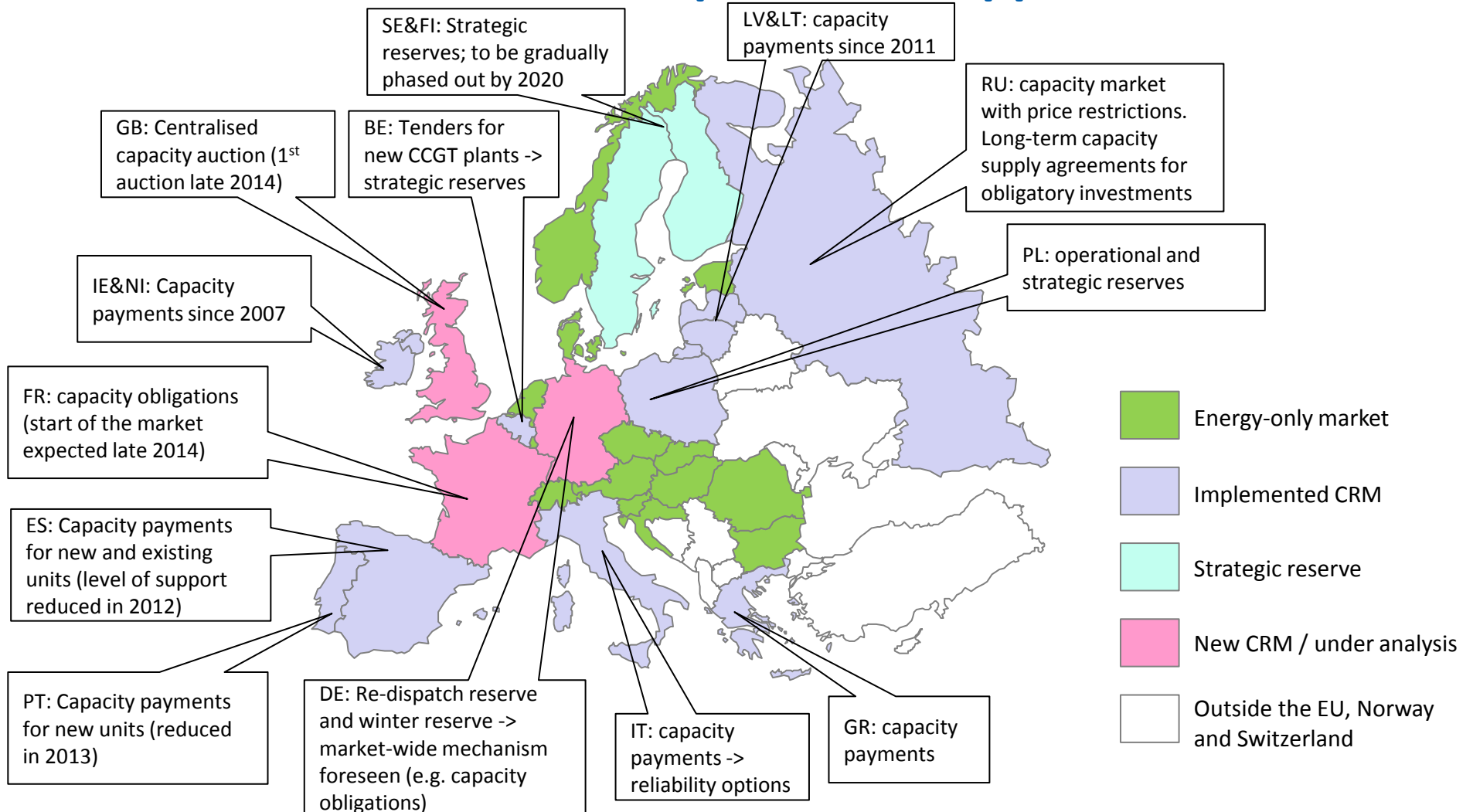
	Energy	Flexibility	Capacity <sup>1</sup>
Goal	Efficient dispatch	Short term system adequacy	Long term system adequacy
What it does	Delivers energy in the most cost-efficient way by having the market define the system's merit order	Enables the system to respond to short-term variations in the supply/demand 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

1. CRMs especially relevant for some regional markets

## Generation adequacy measures have clear cross-border implications

- **Security of supply is coupled in synchronized markets. Member States are not allowed to discriminate between cross-border contracts and national contracts when taking safeguard measures or resolving congestions.**
- **Generation adequacy should take into account the contribution of cross-border capacities:** this requires a firm commitment between involved Member States and a high degree of cooperation/coordination between involved TSOs.
- **Day-ahead, intra-day and balancing markets will make sure that electricity flows in the efficient direction.** Any capacity mechanism should not lead to inefficiencies in day-ahead, intra-day and balancing markets.
- **Non-harmonised solutions will lead to free riding and unfair competition in the short-term and to structural changes with closure in the least favourable area and investments in the most favourable area,** which would unnecessary increase costs to consumers.

# The effort to implement CRM should move away from the current national piecemeal approach...



## ... to a coordinated effort to establish regional instead of national models in the short/medium term

- **Member states should coordinate** among themselves and adopt **market-based mechanisms** that allow **cross-border participation**
- The **preferred approach** would be to adopt the **same model at regional level** or at minimum to introduce market-based mechanisms at national level with cross-border participation
- **Cross-border participation and a seamless cooperation of transmission system operators (TSOs)** will be the cornerstone of any new market design adjustments

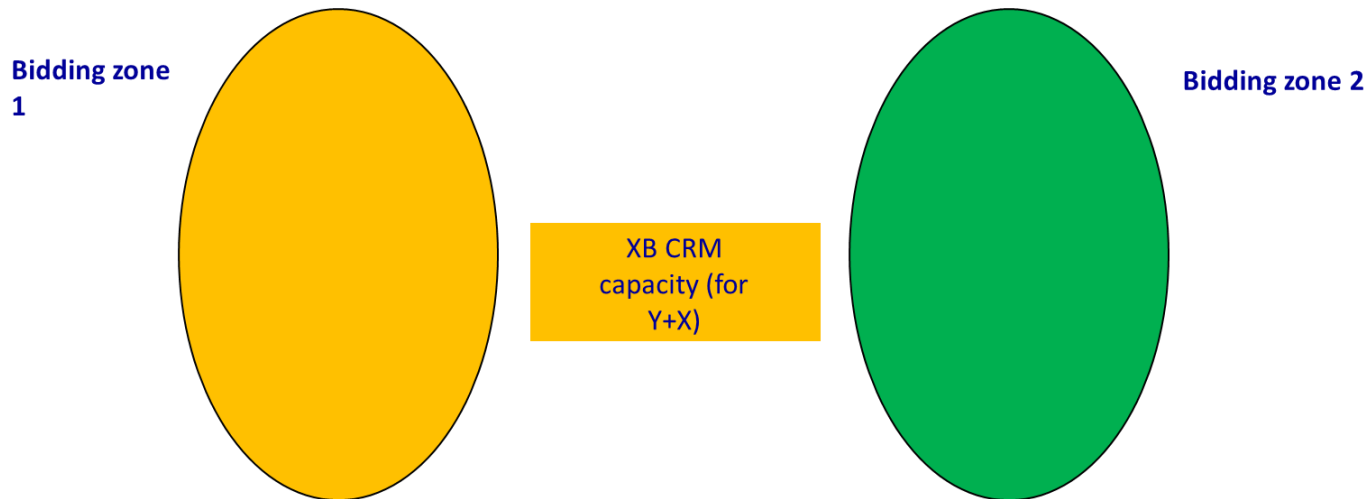
**A fully European approach to the completion of the IEM** must not be hindered by the introduction of regional models

## Establishing regional CRM models presents many political challenges that have to be overcome

- **Member States** - political acceptance that cross-border capacity is reliable for national system adequacy must increase
- **TSOs** - generation adequacy assessments should be done from a European or at least regional perspective (ideally with common criteria for lost of load expectation and value of lost load); they should act as one system operator and avoiding isolating national markets in scarcity situations
- **NRAs** – transparency is needed in the approval process of the amount of capacity that should be allowed to participate cross-border

## Eurelectric believes that cross-border participation should be explicit

- Implicit participation (considering C-B capacities, but not including them in the market) neglects the dynamic effects. More efficient capacity providers might close or not start providing capacity, which unnecessarily increases the cost to consumers.
- This **EURELECTRIC proposal** for a cross-border participation mechanism is **only one possible design**
- The basic idea is to **build on how cross-border day-ahead markets work**





## Example with a common CRM in 2 bidding zones

Bidding zone 1		Bidding zone 2	
Capacity (MW)	Price (k€/MW/Y)	Capacity (MW)	Price (k€/MW/Y)
1000	5	25	20
2000	8	25	22
500	15	50	28
696	25	50	31
3	27	50	34
1	30	50	37
2500	35	50	40
50	37	50	43
50	42	50	46
50	47	50	49
50	52	50	52
50	57	50	55
50	62	50	58
50	67	50	61
50	72	50	64
50	77	50	67
50	82	50	70
50	87	50	73
50	92		
50	97		
50	102		
50	107		
50	112		
50	117		
50	122		

← Individual biddings corresponding to the amount of money needed to keep the plant or to invest the plant

Merit order bidding list in the local BZ auctions →

Without XB CRM participation: what would the CRM value in BZ 1 be if 7500 MW is needed, and in BZ 2 if adequacy requires 500 MW? See next slide.

Bidding zone 1		Bidding zone 2	
Capacity (MW)	Price (k€/MW/Y)	Capacity (MW)	Price (k€/MW/Y)
1000	5	25	20
3000	8	50	22
3500	15	100	28
4196	25	150	31
4199	27	200	34
4200	30	250	37
6700	35	300	40
6750	37	350	43
6800	42	400	46
6850	47	450	49
6900	52	500	52
6950	57	550	55
7000	62	600	58
7050	67	650	61
7100	72	700	64
7150	77	750	67
7200	82	800	70
7250	87	850	73
7300	92		
7350	97		
7400	102		
7450	107		
7500	112		
7550	117		
7600	122		

## Outcome of separated CRM markets (i.e. without XB CRM)

Bidding zone 1		Bidding zone 2	
Capacity (MW)	Price (k€/MW/Y)	Capacity (MW)	Price (k€/MW/Y)
1000	5	25	20
3000	8	50	22
3500	15	100	28
4196	25	150	31
4199	27	200	34
4200	30	250	37
6700	35	300	40
6750	37	350	43
6800	42	400	46
6850	47	450	49
6900	52	500	52
6950	57	550	55
7000	62	600	58
7050	67	650	61
7100	72	700	64
7150	77	750	67
7200	82	800	70
7250	87	850	73
7300	92		
7350	97		
7400	102		
7450	107		
7500	112		
7550	117		
7600	122		

In BZ 1, the needed CRM would be 112 k€/MW/Y

In BZ 2, the needed CRM would be 52 € /MW/Y

Total CRM cost for BZ1 = 840.000 k€/Y

Total CRM cost for BZ2 = 26.000 k€/Y

**Total CRM cost for BZ1+2 = 866.000 k€/Y**

The red resources both in BZ1 and BZ2 would not be accepted in the CRM

## Outcome of coupled CRM markets subject to a XB CRM of 250 MW between BZ1 and BZ2

Bidding zone 1		Bidding zone 2	
Capacity (MW)	Price (k€/MW/Y)	Capacity (MW)	Price (k€/MW/Y)
1000	5	25	20
3000	8	50	22
3500	15	100	28
4196	25	150	31
4199	27	200	34
4200	30	250	37
6700	35	300	40
6750	37	350	43
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6900	52	500	52
6950	57	550	55
7000	62	600	58
7050	67	650	61
7100	72	700	64
7150	77	750	67
7200	82	800	70
7250	87	850	73
7300	92		
7350	97		
7400	102		
7450	107		
7500	112		
7550	117		
7600	122		

In BZ 1, the needed CRM would be 87 k€/MW/Y for 7250 MW local capacity and 250 MW XB CRM capacity

In BZ 2, the needed CRM would be 67 k€/MW/Y for 500 MW local and 250 MW capacity exported CRM to BZ1

Operator would buy 250 MW capacity in BZ2 @67k€/MW/Y and sell it @87k€/MW/Y

Total CRM cost for 7500 MW BZ1 = 652.500 k€/Y

Total CRM cost for 500 MW BZ2 = 33.500 k€/Y

Total CRM cost for BZ1+2 = 686.000 k€/Y

TSO XB CRM rent = 5.000 k€/Y

**Total net CRM cost for BZ1+2 = 681.000 k€/Y**

The red resources both in BZ1 and BZ2 would not be accepted in the CRM

# Cross-border participation of CRM is crucial

## Which product?

		Availability	Delivery
Who participates?	Capacity provider	<p><b>A</b></p> <ul style="list-style-type: none"> <li>Capacity providers sell their capacity cross-border.</li> <li>They would be responsible only for being available in scarcity situations.</li> </ul>	<p><b>B</b></p> <ul style="list-style-type: none"> <li>Capacity providers sell their capacity cross-border.</li> <li>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.</li> </ul>
	Interconnector	<p><b>C</b></p> <ul style="list-style-type: none"> <li>Interconnector sells capacity cross-border.</li> <li>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).</li> </ul>	<p><b>D</b></p> <ul style="list-style-type: none"> <li>Interconnector sells capacity cross-border.</li> <li>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.</li> </ul>

- **EURELECTRIC** prefers capacity provider selling availability where the interconnector gets paid for the “congestion rent” - **A**
- **Delivery as product is not suitable** as it has 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**

## EURELECTRIC has also outlined the key principles that should be respected in Model **A**

### Key principles to be respected:

- **Common requirements and market rules** for all CRM participants (e.g. certification, penalty regime, availability requirement, etc.)
- Participation with the **same capacity in more than one CRM should not be possible** (no double commitment and earnings)
- **TSOs** should offer a **certain amount of cross-border participation** (to be approved by NRAs)
- **No reservation of cross-border capacity** for CRM
- CRM must **not influence the cross-border allocation** for forward, day-ahead, intra-day and balancing markets or dispatch / operational decisions

## Conclusions

- It is possible to let **capacity providers from other bidding zones participate in capacity mechanisms in a market based way. Implicit participation neglects the dynamic effects.**
- The **cross-border participation in CRM** should have **no influence** on the **cross-border allocation for forward, day-ahead, intra-day and balancing markets**
- Capacity providers should be the ones providing C-B capacity, but there can be a **market value on cross-border transmission capacity** for capacity mechanisms in addition to energy, which should be considered in cost benefit analysis for new interconnectors
- EURELECTRIC recognises the complexity of the CRM cross-border participation concept and pleads for **harmonisation/coordination of the national CRM** to facilitate the participation of foreign generation, demand response and storage