Market RES

WP3 Expert Workshop

Market design options defined so far and assessment criteria

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Most relevant pending market design issues

Long-term electricity mechanisms and markets

1. Long term CRM mechanisms
2. Long-term markets and long-term cross-border trading

Short, and very short term electricity market

3. Network representation
4. Timing of markets
5. Bidding protocols and pricing rules in ST energy markets
6. Frequency regulation services

Transversal: the future role of RES and DSR

7. Support mechanisms and participation of RES in markets (LT & ST)
8. Support mechanisms and participation of DSR in markets (LT & ST)

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Long Term – CRM mechanisms (i)

The discussion has been intense...

Ref: C13-EWG-95-05

CEER views on the Commission's Public Interventions Package:
Delivering the internal electricity market and making the most of public intervention

12 December 2013

CEER

Introduction

The Council of Euro
Package on public
present document
(NRAs) regarding
adequacy, the g
renewable ene
incorporating d
dialogue with t

ACER
Agency for the Cooperation
of Energy Regulators

Pursuant to Article 11 of Regulation (EC) No 713/2009,

THE AGENCY FOR THE COOPERATION OF ENERGY REGULATORS reports on:

CAPACITY REMUNERATION MECHANISMS AND THE INTERNAL
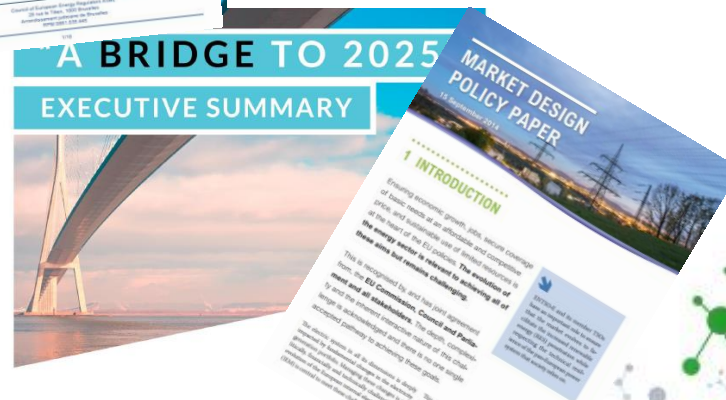MARKET FOR ELECTRICITY

of 30 July 2013

1. **Introduction**

1) The aim of the on-going electricity market integration process in Europe is to ensure an efficient cross-border use of existing generation capacity, demand-side resources and transmission infrastructure, and to promote an efficient system development.

Council of
European
Energy
Regulators

CEER Response to the
European Commission Consultation Paper
on generation adequacy, capacity
mechanisms and the internal market in
electricity

7 February 2013
Register number: 65470797015-89

EUROPEAN COMMISSION

Brussels, 5.11.2013
SWD(2013) 438 final

COMMISSION STAFF WORKING DOCUMENT

Generation Adequacy in the internal electricity market - guidance on public interventions

Accompanying the document

Communication from the Commission

Delivering the internal electricity market and making the most of public intervention

A BRIDGE TO 2025
EXECUTIVE SUMMARY

MARKET DESIGN
POLICY PAPER

1 INTRODUCTION

Market **RES**   XXX Preocupación por

Long Term – CRM mechanisms (ii)

...and still is (target model for SoS, cross border particpation)

Long Term – CRM mechanisms (iii)

Classifying design alternatives: two possible approaches

Capacity Markets

Bilat. Capacity Markets

Capacity Payments

Reliability options

Strategic reserves

Long-term energy auctions

VS

Purchasing mechanism
Centralisation   Auction or Bilateral

Targeted Market
Selling Side
Buying Side

Product
-Physical (E/C) and/or financial
-Lead time
-Contract duration
-Indexation
-Penalties

Firm supply

P vs Q

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Long Term – CRM mechanisms (iv)

Design elements: the product of the CRM mechanism as the cornerstone

Firm supply

Financial contract
(forward, option, …)

PRODUCT

Physical energy delivery
(penalties)

Time terms
(lead time, duration)

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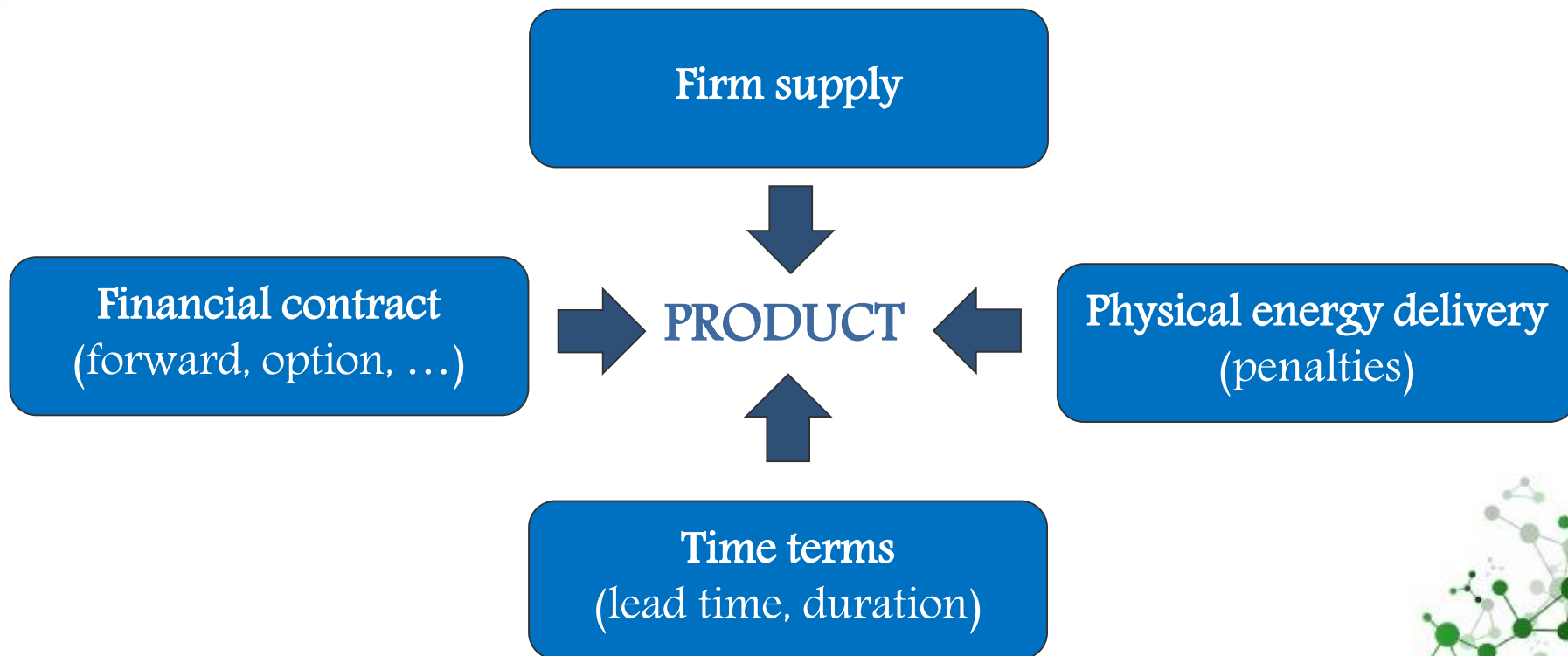
Long Term – CRM mechanisms (v)

The regional context

- Implicit vs explicit participation

NS-I

NS-E

S-I

S-E

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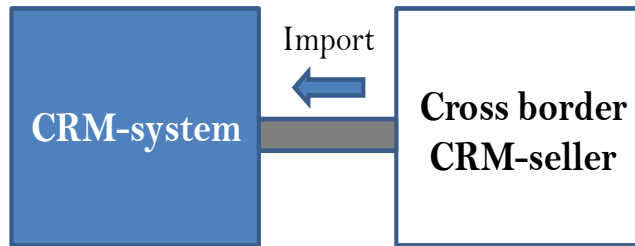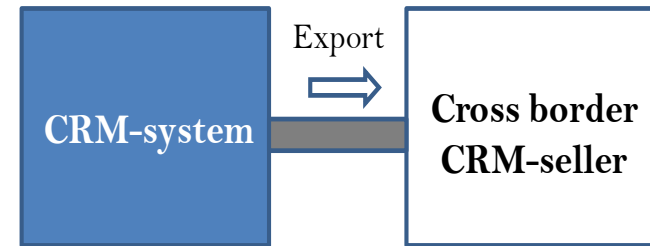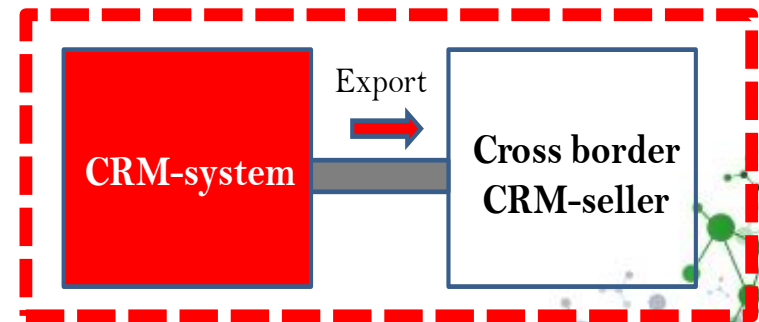
Long Term – Long term markets

Long-term markets

- The major concern is to ensure liquidity

Long-term cross border energy products

- Mayor design elements
    - Physical vs financial contracts
    - Flowgate vs point to point
    - Role of the TSO – compulsory provision of the service or not
    - The firmness of the contract

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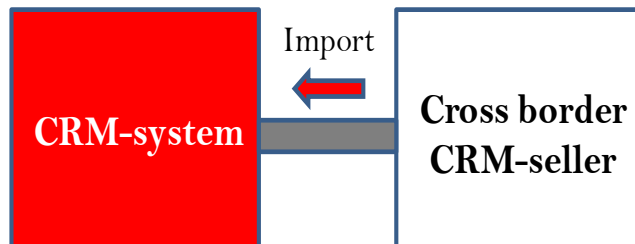
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Network representation (dispatch and prices)

Design alternatives

- Zonal vs nodal (for dispatch and prices)

 VS

- Capacity calculation
  - Net transfer capacity vs flow-based
  - Different degrees of modeling detail for flow-based

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Timing of markets

Design alternatives

Day Ahead

Market Operator Process · Time horizon for schedules

Re-schedule

Market Operator Process · Time horizon for schedules

f-reg (capacitity) · 3 f-r · 2 f-r

Intra-day

Re-schedule

f-reg (energy) · 3 f-r · 2 f-r
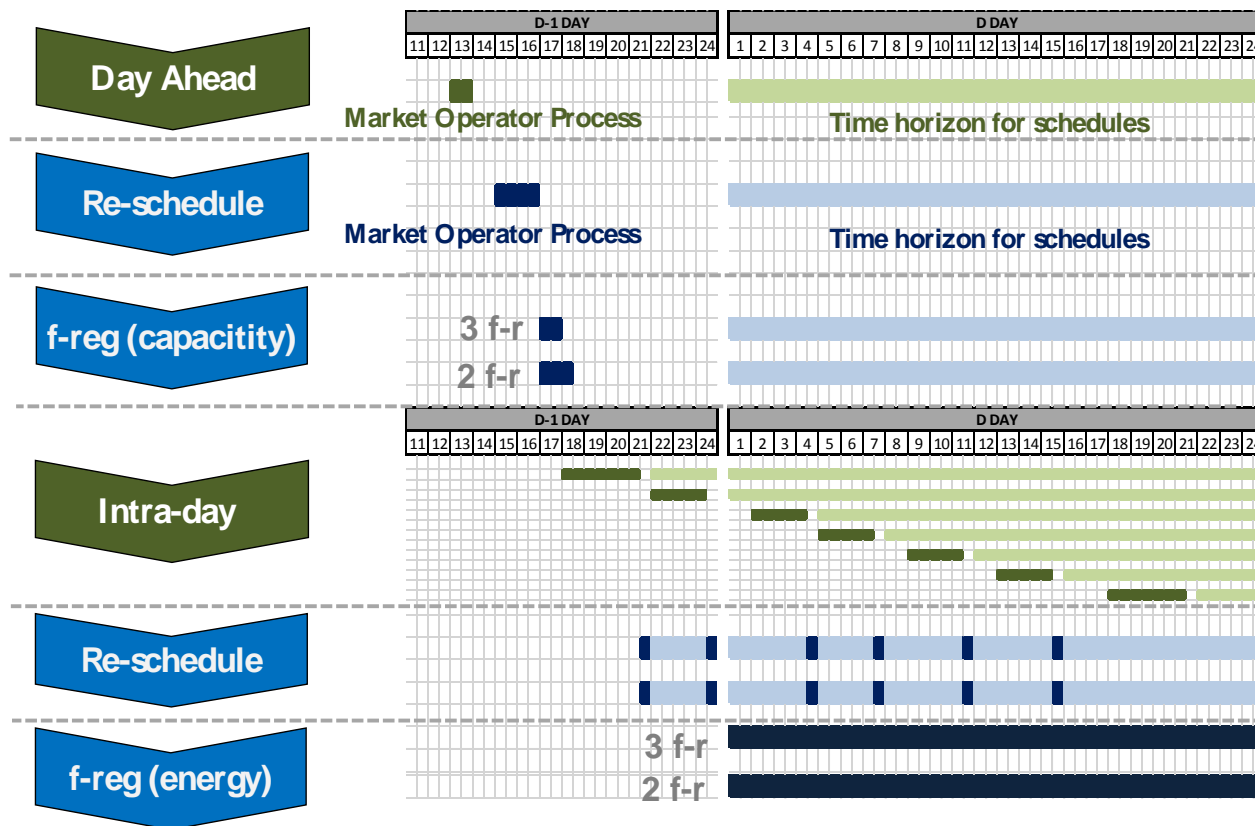
5. Market Orders

The algorithm can handle a large variety of order types at the same time, which are available to the market participants in accordance with the local market rules:

- Aggregated Hourly Orders
- Complex Orders
  - MIC orders
  - Load Gradient orders
- Block Orders
  - Profiled Block Orders
  - Linked Block Orders
  - Exclusive Groups of Block Orders
  - Flexible Hourly Orders
- Merit Orders and PUN Orders.

EUPHEMIA Public Description
PCR Market Coupling Algorithm

PCR
PRICE COUPLING OF REGIONS

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Bidding protocols and pricing rule in Euphemia

Example of complex block orders

EUPHEMIA: Linked Block Orders

- Long term hedging:
- Day-Ahead Market (Exclusive)
- Intra-Day Market (Exclusive)
- Balancing and Dispatch (Mandatory)
- Imbalance

- Significant flexibility to the DAM
- Parent includes start up and no load costs
- Minimal Acceptance Rate (MAR)

MW

GRANDCHILD
CHILD
PARENT

Trading Period

- Parent can be linked to more than one child

MW

C(2)
A(2) A   B   C   PARENT   D

Trading Period

Price calculated by means of a sub-problem

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Subtask 3.2.4: Balancing markets design options

- **Main aspects of balancing markets designs**
  - **Product**: balancing capacity, balancing energy
  - **Product direction**: upward, downward or joint upward and downward (band)
  - **Gate-closure**: time at which bids are no longer accepted
  - **Activation rule**: priority order for the activation of reserve, either pro-rata (proportionally the amount of product contracted) or according to the merit order of energy price bids
  - **Settlement**: remuneration rule applied to BSPs for service provision

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Subtask 3.2.4: Balancing markets design options

- Imbalance settlement :

  ▪ **Pricing system:** single *versus* dual-price

  ▪ **Imbalance price:** marginal *versus* average price of activated reserves

  ▪ **Imbalance settlement period:** shorter periods facilitate the allocation of costs to imbalanced BRPs

  ▪ **Publication of imbalance s/imbalance prices:** incentive to BRPs to respond to the system's imbalance

➢ Main design options to be assessed are based on existing (and most "advanced") market designs

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Support and Participation mechanisms of RES in markets

Several dimensions can be considered when devising a support/ participation mechanism addressed to RES generation

- 1: Premium vs. FIT vs. Certificate (quota) scheme vs. Long Term Capacity Auction

- 2: Regulated vs. Auction (for Premium and FIT)

- 3: Ceiling and floor or not (for Premium)

Besides these, other differentiated options may exist:

- Net metering

- No support

Market 🔗 RES

Participation mechanisms of demand in markets

- Implicit schemes: whereby demand response is modifying the consumers load profile in markets

- Explicit schemes: whereby changes to the profile of demand w.r.t. a baseline are disptached in markets

  - Bilateral: conditions (price, quantity) applied to the change of the demand level are negotiated with a bilateral counterpart (the supplier)
  - Centralized: conditions are determined in a centralized market

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Support mechanisms and Participation of demand and RES in markets

Overcoming barriers to their participation in markets

CRM - Firm supply?	Short term	Balancing
Which amount?	...	Which time for changes to be sustained over?

Long term markets -What products?

...

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Assessment criteria of electricity market designs

Main general categories of criteria

1. Efficiency
2. Effectiveness
3. Robustness
4. Implementability
5. Fairness

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Assessment criteria of electricity market designs

	Efficiency	Effectiveness	Robustness	Implementability	Fairness
CRMs	YES	YES	YES	YES	YES
RES - LT	YES	YES	YES	YES	
DSM LT and ST	YES		YES	YES	YES
X-Border Products	YES			YES	
Network Represent.	YES		YES	YES	YES
Timing of Markets	YES		YES	YES	
Bidding Protocols	YES		YES	YES	
RES - ST	YES		YES	YES	YES
Balancing	YES			YES	

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Subtask 3.2.4: Assessment criteria for balancing markets design options

Main criteria	Explanation
Efficiency: Marginal cost reflectivity, also related to transparency	• Market prices based on marginal pricing *versus* pay-as-bid • Imbalance prices based on marginal costs *versus* prices based on average costs
Efficiency: Cost-causality , also related to fairness & transparency	Related to the design of the imbalance settlement , through which imbalance costs are allocated to BRPs
Efficiency: Liquidity, also related to transparency	Related to market flexibility (separation of products, gate-closures, etc), which may favor or hinder the participation of all potential providers; existence of technology-specific markets
Efficiency: Global coherence	Very-short term energy markets (e.g. continuous intraday) *versus* markets for balancing energy → different pricing mechanisms, similar gate-closure times, etc.
Effectiveness, also related with marginal cost reflectivity	Market intervention (e.g. price caps) may compromise market effectiveness (i.e. TSO has to interfere on the market and redispatch generation in case of lack of bids for a certain service)
Implementability	Compatibility with Target Model on Electricity Balancing (harmonization & integration aspects), experience with the implementation in other systems,

Market4RES

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Thank you very much for your participation, discussion and inputs

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