Capacity Remuneration Mechanisms

Elia's contribution to the CREG consultation

Elia Users' Group: plenary meeting

2 july 2015

Overview

1. **Reflections on EOM(+SR) or CRM**

About the fundamental debate and questions underlying a policy choice.

2. **CRM Design**

If it would be decided to go for a Belgian CRM, Elia has a view on several design aspects.

Reflections on EOM(+SR) or CRM

Reflections on EOM (+SR) or CRM (1/3)

To ensure "adequacy" two major approaches can be followed:

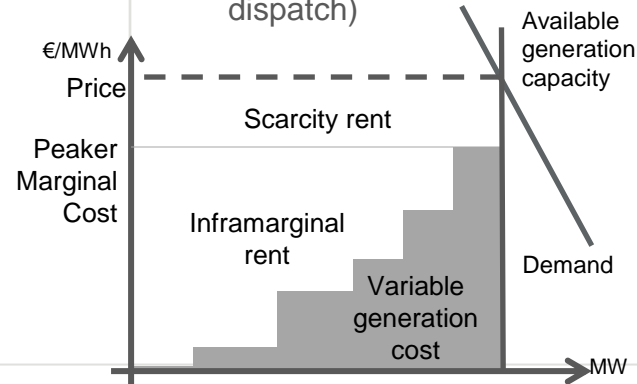## Energy-Only Market (EOM)
(optional: +Strategic Reserves)

Basic philosophy:

- The energy market should provide sufficient revenue to cover all costs.

- To avoid "missing money" for covering fixed costs "scarcity rents" are needed.

- This implies that energy **price signals should reflect scarcity and spike in order to act as investment signal**.

- When strategic reserves are added to the EOM, the (expected) revenue stream does not change for new investments or capacity outside the SR, they still need to recover all costs via the energy market. However, correct price spikes during activation of strategic reserves could incentivize units to return to the market

Capacity Remuneration Mechanism (CRM)

Basic philosophy:

- The "missing money",(= the fixed costs that are not covered through the energy markets) is recovered through a separate mechanism.

- **Investment signals are reflected via this mechanism through a separate revenue stream**.

- This mechanism complements the energy market, which still remains crucial for efficiency. (e.g. efficient dispatch)

€/MWh

Price

Peaker Marginal Cost

Scarcity rent

Inframarginal rent

Variable generation cost

Available generation capacity

Demand

MW

Reflections on EOM(+SR) and CRM (2/3)

Why do some doubt the EOM?

- Will there actually be "scarcity rent", i.e. will there be sufficiently high price spikes?

- Is the market sufficiently developed, e.g. also at demand side?

- Has support of RES killed the business case for non-supported technologies?

- Is an EOM capable of delivering on SoS which today has a public good character?

- Are some necessary improvements to the energy market acceptable (e.g. abolition of price caps)?

- Will investors take the risk to invest based on expected volatile price signals occurring only during a few hours?

- …

→ These are open questions, for which a proper analysis could drive one towards or away from EOM. The answer could also evolve over time.

Reflections on EOM(+SR) or CRM (3/3)

A choice between EOM(+SR) or CRM is not evident and is to be approached from different angles.

Some considerations:

- A crucial (but not necessarily sufficient) condition for EOM(+SR) to be successful is the acceptance of multiple price spikes.

- Even a perfect CRM is not a "holy grail" either. The overall investment climate should be positive. Legal, regulatory and policy stability is required, etc.

- The cost of a CRM mechanism is not negligible and might be different than the cost of SR. However, to compare both a holistic welfare-oriented view is necessary (impact energy prices, level of adequacy, financing cost for investors, etc.).

As such, Elia does not plead in favour nor against a Belgian CRM, but strives to put a CRM into a bigger perspective and debate and has made some reflections in this regard.

CRM Design

Overview

1. Goals for a Belgian CRM

2. CRM contours

3. CRM design features

4. Specific topics

    a. Transition towards a CRM

    b. Potential roles and responsibilities and financing a CRM

5. Conclusions

1. Goals for a Belgian CRM (1/2)

In each country with a CRM the goals have been different, for example:

- France: increased peak consumption

- UK: Significant decommissioning of large combustion plants

- Germany: North-South congestion problem

➔ Different goals could justify different design choices.

Before designing a Belgian CRM, it is important to identify its goals.

1. Goals for a Belgian CRM (2/2)

For Belgium the following goals are important to keep in mind:

- **Secure Belgian Security of Supply with an enduring mechanism**

    ➢ Incentivising <u>existing</u> capacity to remain in the market

    ➢ Incentivising <u>new</u> capacity to be developed

- **Allow for a transition of existing mechanisms into this CRM, thereby stopping the existing 'slippery slope'**

    ➢ Replacing the Strategic Reserve: let units return to the market

- **Ensure compatibility with the energy market and the Target Model**

- **Minimize the impact of market imperfections**

    ➢ E.g. existence of dominant market players

- **Be feasible and realistic on the shorter term**

- **A mechanism should aim for overall economically efficient solutions**

2. CRM contours (1/3)

A large variety of CRMs exists throughout Europe and the world:

- Strategic Reserves

- Capacity payments

- Forward capacity markets

- Reliability options

- …

The choice for Belgium should be **driven by the goals**, but is also **constrained by (emerging) European policy** (State Aid Guidelines, upcoming Sector Inquiry, upcoming Market design communication).

Before entering into specific design features (e.g. product design, auction design,…) it is important to determine the **broad contours of a Belgian CRM.**

2. CRM contours (2/3)

- **Market-based:** A mechanism where market players can compete is needed. Otherwise an efficient outcome cannot be guaranteed.

- **Market-wide**

  - All capacity that is required to ensure security of supply will be remunerated through the CRM. Overall demand is to be covered, not only the gap between estimated supply and demand as is the case for strategic reserves. Only in this way the 'missing money'-problem can be fixed completely, for all capacity and slippery slope problems can be avoided. Otherwise, some capacity should still rely on the occurrence of price spikes.

  - Stated otherwise, all capacity that delivers the 'service of contributing to SoS' should be treated equally.

  - Depending on the technology and the contribution to SoS, a derating of the installed capacity is applied.

  - For technologies benefitting from other support mechanisms or with existing specific arrangements an adapted approach is needed. Double support is to be avoided.

2. CRM contours (3/3)

- **"In-the-market"**

  - All capacity remains in the market, unlike with strategic reserves where the contracted capacity stays "out-of-market" and only produces upon command by the TSO

  - This implies that capacity providers also compete in the energy market (commodity, balancing,…) and can have inframarginal rents from that market which consequently do not need to be covered anymore in the CRM.

- **Technology-neutral:** A CRM should be service-oriented and not technology-oriented.. Of course, when technologies contribute differently to SoS, they should be treated differently (e.g. via derating).

- **Volume-based:** The volume requirement to ensure adequacy is identified in a transparent way by a the competent authority and it is then up to the market to deliver this volume at a market-based price.
The alternative would be to define first a price (i.e. subsidy-level) and then "hope" that the market delivers the intended volume. In this latter approach there is high risk of over- and under dimensioning.

- **Forward and Spot:** The incentive coming from the CRM is created 3-4 years ahead allowing market parties to take action in due time. However, in a transitory phase shorter periods are needed to bridge the gap (cf. infra).

3. CRM design features

Considering:

- Belgian goals

- (emerging) European design constraints

- CRM contours

➔ **A CRM design based on the following features is proposed:**

- Availability-based product

- Inclusion of both generation and demand response

- Differentiated contract duration for new-built and existing

- Centralised auctions at different moments in time

- Taking into account cross-border contributions (and potentially evolving further to XB participation)

3. CRM design features: overview (1/3)

- **Availability-based product:** Capacity should be remunerated on their availability at critical situations (and not on their effective delivery), (cf. infra). This prevents distortions in the energy market. Indeed, delivery-based products would intervene in the short-term merit order and thereby jeopardize an efficient dispatch.

- **Centralized auctions: A 'single buyer' runs an auction to contract all capacity in the CRM**

  - This is the least complex mechanism which allows the fastest implementation and which provides the best guarantees for new investments.

  - Compared to a decentralised (certificate-based) system, it involves fewer players - and consequently fewer roles and responsibilities - as the demand side is represented by a single buyer and not by individual market players. A decentralized mechanism also relies on bilateral contracts between investors and suppliers to ensure new investments, whereas in centralised mechanisms new investments (and new players) have an easier access to the CRM and can more easily profit from longer term arrangements.

  - An artificial sloped-demand curve can be used to reflect society's appetite for risk-taking.

- **Cross-border:** The mechanism should not focus on an 'autarkic' situation and take on board the cross-border contribution in an appropriate manner. An incremental pathway seems realistic: initially relying on a statistical contribution, while working at regional/European level for further integration.

- **Generation and demand in competition:** Both generation and demand should be able to participate in a CRM. Preferably they are brought into direct competition.

3. CRM design features: overview (2/3)

- **Auction calendar:** The main primary auction takes place 3 or 4 years ahead. This is complemented with incremental auctions, for instance, 1 year ahead. This allows creating more competition, including demand response more easily and adjusting positions (both by the single buyer as by the capacity providers)

- **Pay-as-bid auctions:** In order to prevent from windfall profits in the CRM auction, pay-as-bid auctions are preferred. This should be accompanied with measures to ensure appropriate bidding behaviour.

- **Differentiated contract lengths:** New investments require longer contracts (e.g. 10-15 years) than refurbishments (e.g. 3 years) and existing capacity (e.g. 1 year). This could also be different for generation and demand and depend on the concrete needs.

- **SoS-only:** CRMs serve for ensuring adequate SoS. The CRM product or eligibility rules should not put additional requirements w.r.t. flexibility, environment,… Other mechanisms are better suited for this purpose.

3. CRM design features: overview (3/3)

In the **product design** different options exist:

- **€/MW.year-product**

  - Capacity providers receive a fixed remuneration for their capacity based on a competitive auction. In return they agree to be available in the energy market. There is no further direct link with the energy market.

  - This the most simple approach, which might be easier to harmonize.

- **Option-based product** ("reliability option")

  - The product is conceived like a financial option where the capacity provider (i.e. the seller of the option) guarantees to the system/single buyer (i.e. the buyer of the option) to reimburse the difference between the actual energy price and a pre-defined strike price whenever the energy price exceeds this strike price. In return, the capacity provider receives a fixed remuneration (i.e. the option premium). In the CRM, competition between capacity providers aims to contract the options with the lowest fixed remuneration.

  - Off course, additional availability requirements exist as well.

  - An option-based product should also be "**physically backed**" by actual capacity and an obligation to hold such options. The volume of options is to be fixed and bought by a single buyer and not left to a voluntary choice of market parties to hedge themselves or not.

  → A very strong link with the energy market is made by such option-product

  → To the extent they would still occur, scarcity rents above the strike price flow back to the system.

4. Specific topics
Transition towards a CRM

How to go from the existing situation without a CRM and with Strategic Reserves to a CRM with forward auctions? How to bridge the gap between the first auction year and the first delivery year (i.e. 3-4 years)?

A possible solution:

Continue strategic reserves until the first delivery year of the CRM, but start CRM auctions as soon as possible.

- Some time will be required to set up the legal framework and to develop the rules

- The necessary approval procedures have to be followed (e.g. EU)

- A number of years between first auction and first delivery is to be respected

4. Specific topics:
Roles & responsibilities and Financing

Roles & responsibilities

- A CRM creates several **new tasks** for which it is to be decided who will be responsible: volume determination, certification, verification, keeping a register,…

- Organising the **auctions is a core task** which is to be executed **by a central entity.** There are several options on who could do this, like the energy administration (e.g. in UK the DECC takes up a prominent role next to NG), the TSO (in France, although not centrally organized, RTE is a key player), another third party…

Financing

- The **revenues paid to capacity in the CRM auctions** are to be financed. As there is a central entity acting as a 'single buyer', there is no direct counterparty from the market.

- There are different options possible, for instance:
  - ➢ Option 1: PSO financed via a 'surcharge' through the TSO.
  - ➢ Option 2: **financed via a 'Levy' through the suppliers**
  - ➢ Option 3: financed through state budget

➔ **As security of supply is closely linked to the contractual obligations of suppliers to their customers, it would make sense to promote option 2.**

5. Conclusions

If policy makers decide on a Belgian CRM:

- A Belgian CRM design should be driven by clearly **identified goals and the Belgian situation**. Without such goals it is difficult to determine which design is the most appropriate. Copying an existing design is not a good idea either. Additionally, design requirements identified by EU policy makers are to be accounted for from the start.

- The proposed CRM contours allow choosing between different broad families of CRM designs. A **forward capacity market seems the most appropriate**.

- The proposed CRM design features guarantee that the Belgian goals are met, although this might **sometimes require a trade-off**. Key features are centralised auctions, availability-based products, competition between generation and demand, differentiated contracts and taking into account cross-border contributions. Cross-border aspects are relevant for Belgium, but also increase complexity.

- A CRM never starts from tabula rasa. It is important to foresee in **a proper transition**. Strategic reserves may play a role in such transition.

- The design should be accompanied by a clear description of **roles and responsibilities** of all actors as well as a vision on how to finance the CRM.

Many thanks for your attention!

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