EXCESSIVE CLEARING PRICE CONTROL MECHANISM (ECPC)

A mechanism to decouple the impact of the marginal price setting unit on electricity prices

Energinet

BACKGROUND INFORMATION FOR THE MEETING ON DECEMBER 1st 2022
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• The ECPC in numbers
• Q&A based on feedback already received
THE ECPC MECHANISM IN WRITING

**Model advantages:**

1. Maintains merit order dispatch
2. Dampens consumer prices by decoupling price of marginal unit and consumer price
3. Maintains security of supply
4. Does not increase gas consumption
5. Can be implemented quickly, as it is compatible with the IEM, current market rules and market coupling

**Model description:**

- The mechanism can be viewed as an add-on to the current wholesale pricing mechanism based on marginal pricing, which is only triggered in hours with very high price levels.
- The mechanism has two key variables: 1) the “threshold price” level and 2) the “pay-out factor”.
- At price levels above the threshold, each individual offered volume is sold at a discounted price above their individual bid price, except the marginal MWh; discounted by pay-out-factor.
- Based on the individual cleared supply prices, a new “cleared demand price” is calculated as the weighted average of these supply prices.
- The model risks encouraging pay-as-bid behaviour if the “pay-out-factor” is set too low.
THE ECPC MECHANISM VISUALISED

Example: Effect of the Excessive Clearing Price Control Mechanism with a price threshold of 180 EUR/MWh and a pay-out factor of 80%, in a market outcome with demand of 3,500 MWh and a marginal clearing price of 300 EUR/MWh.
THE ECPC MECHANISM IN NUMBERS

When prices are above the threshold:

Generator marginal cost: 70EUR/MWh
Reference spot price: 300 EUR/MWh
Pay out factor: 80%

Producer surplus change:
Normal surplus = (300 – 70) x 100% = 230€/MWh
ECPC surplus = (300 – 70) x 80% = 184€/MWh

Loss for generator is a 1:1 gain for consumers, thus socio economic welfare impact is neutral
Q&A based on feedback received
INCENTIVES FOR PRICE SPECULATION/ MANIPULATION

**Question/Concern:** The mechanism may incentivise market participants to bid at prices higher than marginal cost to maximise revenue at a high pay-out factor in following markets.

**Answer:** It is true that the incentives to speculate to manipulate prices increases compared to remuneration based on pure marginal pricing. Examples of speculative behavior:

- Generators (with low marginal costs such as renewables especially) can bid at prices above marginal cost to obtain a higher cleared supply price, when the reference spot price (based on the marginal unit) is expected to exceed the price threshold.

- Demand can speculate to buy excess power at a lower price in the day-ahead timeframe and sell at a higher price in intra-day, thereby taking advantage of arbitrage between day-ahead and intraday.

But these kinds of price speculation are a natural part of the market already today. If market participants systematically manipulate prices by e.g., bidding above marginal cost at high price levels, this is covered by the REMIT regulation, which does not allow speculation that results in market manipulation. The regulation defines market manipulation as: “...secures or attempts to secure, by a person, or persons acting in collaboration, the price of one or several wholesale energy products at an artificial level...”.

To safeguard against this risk of price speculation when introducing the ECPC mechanism, there will likely be a need to strengthen market surveillance to adhere with REMIT. Market surveillance could e.g., be focusing on relative differences in bidding behavior when prices are above and below the chosen price threshold, respectively. If renewable generators e.g., bid at prices higher than marginal cost when reference spot price is expected to exceed the price threshold, but at marginal cost when reference spot price is lower than the price threshold, this constitutes market manipulation under REMIT.

Finally, the best safeguard against this risk of price speculation is to set the pay-out factor at a sufficiently high level to minimizes incentives for price speculation.
DESIGN OF THE ECPC MECHANISM: PRICE THRESHOLD AND PAY-OUT FACTOR

**Question/Concern:** The original design of the ECPC mechanism introduced a peculiar inconsistency at reference spot prices around the price threshold, which would be particularly evident at low pay-out factor levels.

**Answer:**

**Inconsistency in original proposal (yellow line)**

Example: Say the reference spot price = 181. With the original proposal a unit with 70 EUR/MWh marginal cost receives 70 + 0.8*111 = 158.8 EUR/MWh, i.e., less than 180. This may introduce incentives for price speculation (peculiar bidding behavior) around the price threshold.

**Solution (teal line)**

This peculiarity can be avoided by setting the payout to:

\[
\text{MAX}(\text{bid price} + \text{pay\_out\_factor} \times (\text{reference spot price} – \text{bid price}); \text{price threshold} \ (180))
\]

This avoids the reduction once the reference spot price exceeds the price threshold.

We have revised the algorithm so supply clears at least at the threshold price, when the reference clearing price (spot) is above this threshold.
DESIGN OF THE ECPC MECHANISM: PRICE THRESHOLD AND PAY-OUT FACTOR

**Question/Concern:** Policy makers may prefer a lower pay-out factor to further decouple the impact of the marginal price setting unit on electricity prices and thereby strengthening the mechanism’s ability to protect consumers from excessive prices. This, however, reduces market efficiency, as it creates incentives for price speculation.

**Answer:** Design options to further decouple gas and electricity prices with the ECPC mechanism

If policy makers wish to strengthen the mechanism’s ability to protect consumers from excessive prices, we recommend first to set the price threshold at a lower level, before opting for reducing the level of the pay-out factor (to not strengthen incentives for speculative bidding).

An alternative, which we recommend instead of setting the pay-out factor at a “too low” level, the mechanism can be designed as a “pay-out-ladder”, in which the pay-out factor is stepwise lowered at increasingly higher price thresholds (purple line).

The benefit of this design choice is that it progressively allows to capture a larger proportion of the producer surplus, which is instead transferred to consumers as increased surplus.

The drawback of this “payout-ladder” is that it increases implementation complexity and may lower cleared demand price predictability. Also, all else being equal, the lower pay-out-factor means higher incentive for pay-as-bid behaviour.

### Design option: "Pay-out-ladder"

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Pay-out factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st level</td>
<td>130 90</td>
</tr>
<tr>
<td>2nd level</td>
<td>150 75</td>
</tr>
<tr>
<td>3rd level</td>
<td>200 60</td>
</tr>
<tr>
<td>4th level</td>
<td>300 50</td>
</tr>
</tbody>
</table>

**Design option**

- **Reference clearing price (spot)**
- **Cleared supply price (original (corrected) proposal)**
- **Cleared supply price (stepwise)**
REFERENCE PRICE FOR FINANCIAL CONTRACTS SUCH AS CFDs AND PPAs

Question/Concern: What is the impact on CFDs/PPAs when there is a difference between the cleared supply price and the cleared demand price?

Answer: Since the intention of the mechanism is to decouple the impact of the marginal unit on the electricity price paid by demand and thereby protect consumers against excessive prices, the new cleared demand price should be used as the reference price for financial contracts such as CfDs and PPAs. There may therefore be a need for renegotiating existing contracts (transaction cost).

The ECPC mechanism results in a discrepancy between the cleared supply price and the cleared demand price. This challenges the concept of CfDs and PPAs. If the cleared supply price is below the cleared demand price (red ring) the producer will lose the difference between the cleared supply price and the cleared demand price. If the cleared supply price is above the cleared demand price (green ring) the producer will win the difference between the cleared supply price and the cleared demand price. The lower the pay-out factor the greater the loss/win will be. The example to the right applies a pay-out factor of 40%.

The challenge is that this introduces a financial risk for especially low-cost renewables, as they will face a loss when adhering to their fixed price contract, when the ECPC mechanism is triggered. These generators will need to finance this loss with the excess profits earned, when prices are higher than their marginal costs but not above the price threshold that triggers the ECPC mechanism.

Recommendation for mitigating this generator risk: The price threshold should be set at a sufficiently high level to facilitate generators’ ability to earn excess profits to compensate for this loss. When renegotiating existing contracts for the new reference price, generators will be able to factor in this loss when setting the strike price.
IMPACT ON DEMAND SIDE BEHAVIOR IN THE ELECTRICITY MARKET

Question/Concern: The price paid by demand is calculated after the clearing process is finished, which means that this price is not known during the clearing process. This will result in flexible demand being dispatched based on the wrong price signal.

Answer:
This question/concern can be divided in two:

1. Flexible demand (incl. demand-side response, storage, batteries) is dispatched based on the wrong price signal (the cleared demand price).
   • We do not agree with this, as flexible demand/demand-side response will be remunerated just like generators by their individual cleared supply price, not by the cleared demand price. As such, a flexible demand bid is treated and therefore also remunerated just like a supply bid.

2. Flexible demand that bids into day-ahead at a maximum price between the reference spot price and the new cleared demand price is not dispatched in day-ahead, even though the cleared demand price is lower than its maximum bid price.
   • Example: Flexible demand with a maximum price of 280 (willingness to pay) is not dispatched in day-ahead, because the reference spot price is 300. But after the clearing process, the cleared demand price is calculated to 250, which is below their willingness to pay. In that case, the flexible demand was willing to consume, but it is not dispatched in day-ahead.
   • In such a situation, we believe the balancing responsible parties (BRPs) will handle this by submitting the demand bid to intraday, in order not to end up with an imbalance at the cost of the imbalance settlement price. BRPs are expected to be able to forecast this situation, when the reference clearing price is expected to be close to or above the threshold, and hence be ready to trade away any imbalances in intraday.
IMPACT ON PRICES IN INTRADAY AND BALANCING MARKETS

**Question/Concern:** In the note on the ECPC, you write that “Prices in intra-day and balancing markets likely to be lower as well, due to the day-ahead market being the reference market, bringing down the overall costs of electricity." But the market prices are not really affected, so why should ID and balancing prices go down?

**Answer:**

It is true that the reference spot price is not affected, but the prices at which supply is remunerated and at which demand is charged are affected. Whether prices in intraday and balancing markets are affected by the adjusted clearing prices in day-ahead depends on whether the market is short or long, i.e., if there is a need for upregulation or downregulation.

- **In case of downregulation** is needed: Since the price at which supply clears is lowered in day-ahead, it is expected that when the system is long, settlements in intra-day and the balancing markets will be lower as well compared to the market today without the ECPC mechanism, as downregulation bids are provided by those generation units (blue bars to the right) that have already been dispatched in the day-ahead.

- **In case upregulation** is needed: Pricing in intraday and balancing markets will be the same as today, because upregulation bids are provided by those generation units (grey bars to the right) that were not dispatched in the day-ahead market and are therefore higher up on the merit order.