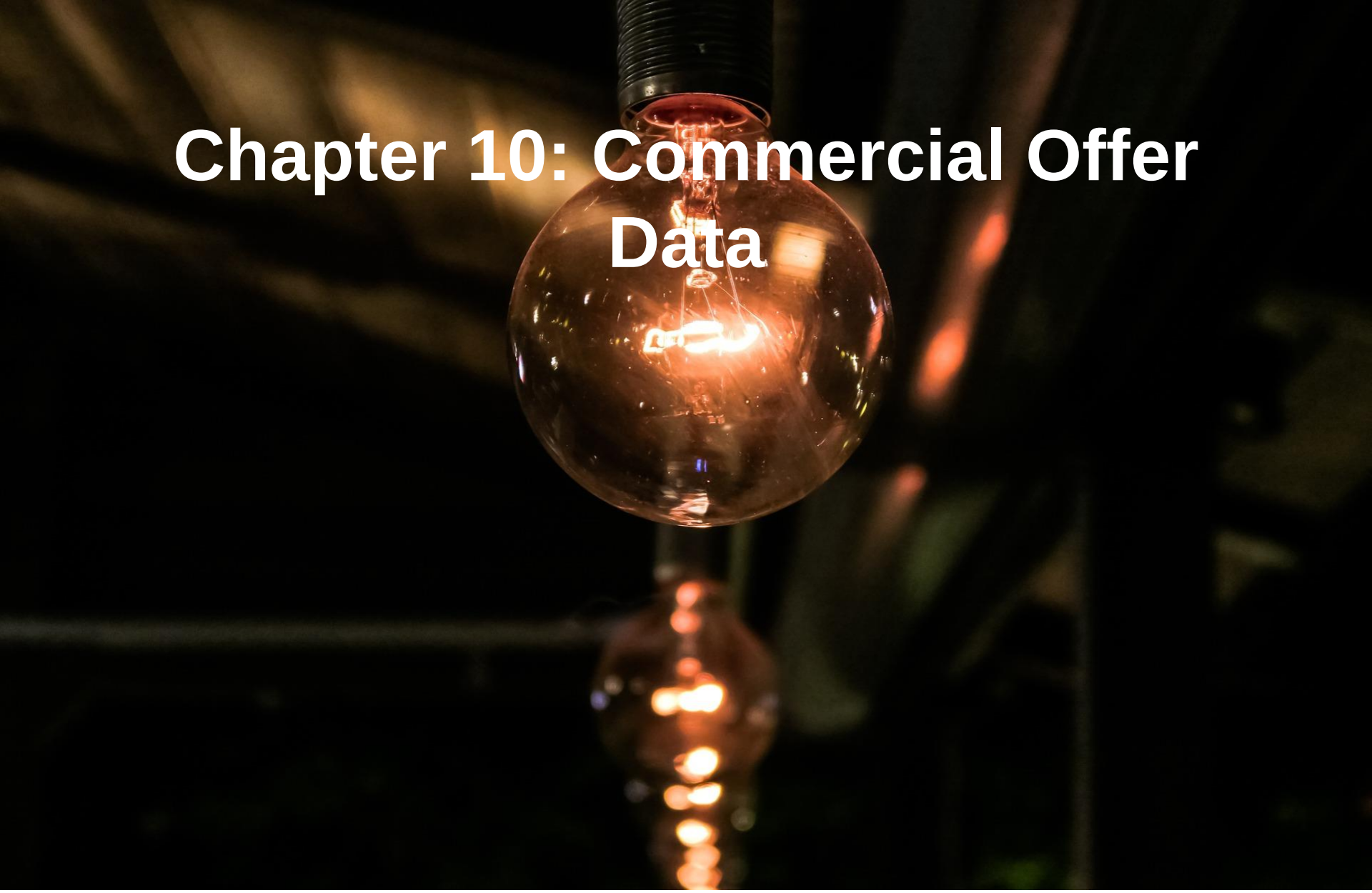


Chapter 10: Commercial Offer Data

Commercial Offer Data – 1/12

- COD is data which represents the cost implications for dispatching a unit differently from its market position (defined through its PND submission);
- This data is one of the primary means by which a unit can interact with the Balancing Market, influencing its schedule, the imbalance price, and its settlement amounts;
- There are three COD submission types, in two format types:
  - Default data:
    - Complex Bid Offer Data format, mandatory, initially submitted as part of registration;
    - (Note that the default data submission in registration is part of the enduring registration process, a slightly different process was undertaken for the transitional registration process pre-go-live).
  - Trading Day Specific data:
    - Complex Bid Offer Data format, optional.
  - Trading Period Specific data:
    - Simple Bid Offer Data format, optional.

Commercial Offer Data – 2/12

The following table outlines which elements of COD must be submitted by unit type:

Data Element	Energy Limited Unit	Demand Side Unit	Other Dispatchable Units
Simple Incremental Price Quantity Pairs			
Simple Decremental Price Quantity Pairs			
Complex Incremental Price Quantity Pairs			
Complex Decremental Price Quantity Pairs			
No Load Costs			
Start Up Costs			
Shut Down Cost			
Energy Limit			
Forecast Availability Profile			
Forecast Minimum Output Profile			
Forecast Minimum Stable Generation Profile			

Must Submit

Does not Submit

Commercial Offer Data – 3/12

	Complex Bid Offer Data	Simple Bid Offer Data
Mandatory?	Yes (default data in registration)	No
Format	Single Start Up Cost per Warmth State (Hot / Warm / Cold) (€ or £) Single No Load Cost (€/hr or £/hr) 10 part Inc and 10 part Dec Price / Quantity Pair curves (MW and €/MWh or £/MWh)	10 part Inc and 10 part Dec Price / Quantity Pair curves in MW and €/MWh or £/MWh
Timeframe covered in submission	Trading Day	Imbalance Settlement Period
Timeframe covered in resubmission	All open Imbalance Settlement Periods for the relevant Trading Day after time of resubmission	Imbalance Settlement Period if still open at time of resubmission
Balancing Market Principles Code of Practice	Applies	Does not apply
Treatment of Fixed Costs	Explicitly submitted as separate data	Implicitly in prices submitted
Use in Scheduling and Dispatch	For Unit Commitment decisions, and Economic Dispatch decisions if no Simple data submitted	For Economic Dispatch decisions
Use in Imbalance Pricing	For actions taken before GC2, and PQ Pair elements for actions taken after GC2 if no Simple data submitted	For actions taken after GC2
Use in Imbalance Settlement	For non-energy actions, for actions taken before GC2, and PQ Pair elements for actions taken after GC2 if no Simple data submitted	For energy actions taken after GC2

Commercial Offer Data – 4/12

- Which set of COD is used for pricing and settlement is based on:
  - The timing of the Balancing Market actions taken;
  - What formats of COD are submitted; and
  - The reason for which the action was taken (energy vs non-energy) – this only influences the COD used for settlement, not for pricing.
- This is covered in more detail in Instructor Led Training.

Commercial Offer Data – 5/12

- Inc and Dec Price Quantity Pairs have an Absolute MW Quantity format:
    - This is different from the approach in the BETTA market in GB, which considers quantities as being relative to the PN profile;
    - The quantities in Price Quantity Pairs (whether Inc or Dec, complex or simple) cover the entire operating range of the Generator Unit from zero (or less than zero if storage unit):
        - Fixed MW quantities for whole Imbalance Settlement Period representing a generation output level (not cumulative);
        - Negative quantities for Decs taken care of in Accepted Bid Quantity calculation, not in submission of bidding data.
    - In the same range of a unit's output, the prices submitted in the Dec curve must be less than or equal to the prices submitted in the Inc curve;
    - Prices must be monotonically increasing for increasing quantity.

Commercial Offer Data – 6/12

- An Inc curve must be submitted, and a separate Dec curve may be submitted:
  - If no separate Dec curve submitted then Dec curve is taken to be equal to Inc curve submitted;
  - Quantities cover the same output range in both curves, but the quantities submitted may be different in each curve;
  - In the same range of a unit's output, the prices submitted in the Dec curve must be less than or equal to the prices submitted in the Inc curve.

Commercial Offer Data – 7/12

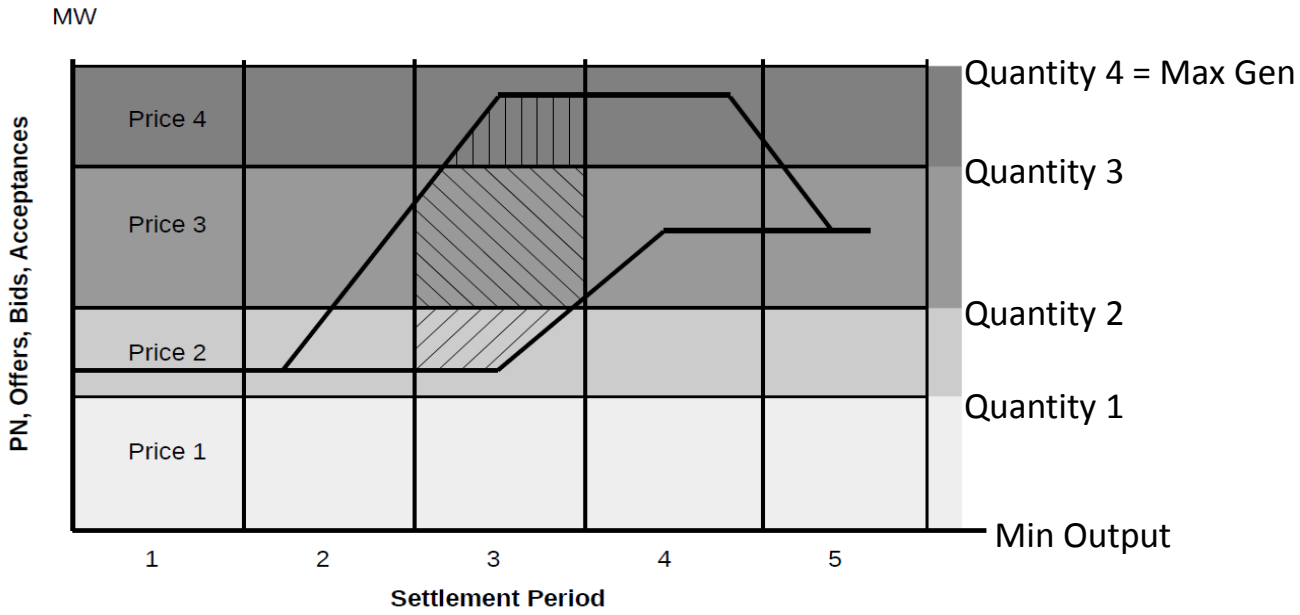
- Format of Inc and Dec Price Quantity Pair curves – Quantities:
  - Quantities can be submitted at a resolution of 0.001MW;
  - Quantities cover the whole output range of a unit, if quantities submitted don't cover this range then prices from those submitted are taken for the missing range:
    - The price associated with the highest Price Quantity Pair submitted is used for all volumes above that quantity;
    - Similarly the lowest Price Quantity Pair submitted is used for all volumes below that quantity;
    - Ensures prices are available for whole operating range even when unit does not submit prices for quantities up to maximum capacity / availability, if Maximisation Instruction issued, etc.
  - Storage units submit negative quantities in the Price Quantity Pairs to represent their pumping / charging range, as well as the positive quantities which represent their generation range.

Commercial Offer Data – 8/12

- Format of Inc and Dec Price Quantity Pair curves – Prices:
  - Prices are in Participant's home currency specified to resolution of €0.01/MWh or £0.01/MWh;
  - Prices must be monotonically increasing for increasing quantity.
  - Price applies from the quantity "downwards" until the next lowest quantity:
    - E.g. if a unit has submitted prices as follows:
      - 50€/MWh at 25MW;
      - 60€/MWh at 50MW;
      - 70€/MWh at 75MW.
    - Then a price of 70€/MWh applies for output between 50MW and 75MW, a price of 60€/MWh applies for output between 25MW and 50MW, and a price of 50€/MWh applies for output between 0MW and 25MW.
- The diagrams in the following slides highlight some of the features of the Price Quantity Pair format described.

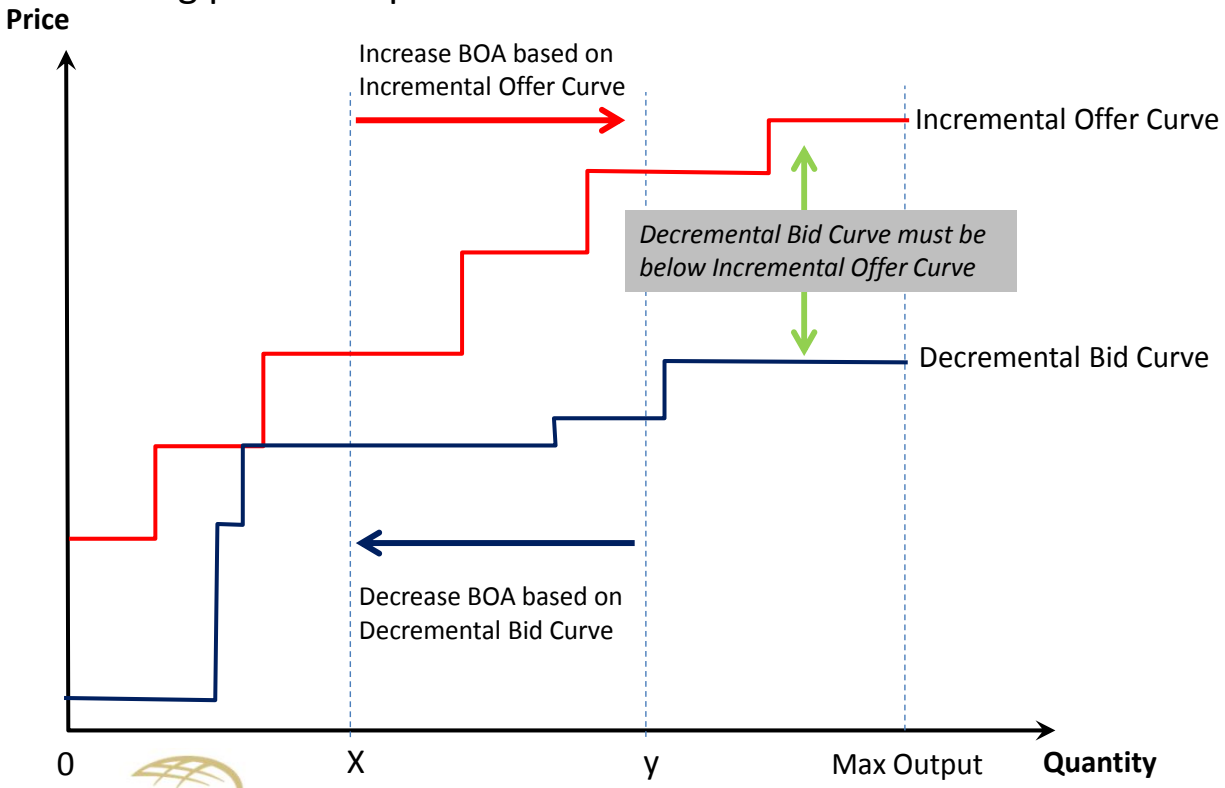
Commercial Offer Data – 9/12

- This figure gives an example of the same COD Price Quantity Pairs applying in multiple periods, and how pricing and Bid Offer Acceptance Quantities could be calculated considering a Final Physical Notification profile (bottom line) and Dispatch Quantity profile (top line);
- The absolute MW quantities submitted (1 to 4) are seen as straight lines representing points on the output range of the unit, covering the whole range. The prices submitted alongside those quantities are applicable for all points below that quantity until the previous quantity. The Bid Offer Acceptance Quantities calculated are split into each PQ band so that the individual price applies.



Commercial Offer Data – 10/12

- This figure gives an example of the relationship between the prices in the Inc PQ Pair curve and the Dec PQ Pair curve for a single COD submission;
- The quantities submitted for each curve are different, but for the same output range the price in the Dec curve is always less than or equal to that of the Inc curve. Each curve is used for considering different situations: Inc prices for increasing power output above PN, Dec prices for decreasing power output below PN.



Commercial Offer Data – 11/12

- Forecast Availability, Minimum Output, and Minimum Stable Generation Profiles part of COD:
  - Used in Scheduling and Dispatch, in particular in longer term schedules – EDIL real-time spot availability used for shorter term schedules nearer real time;
  - Imbalance Settlement Period resolution;
  - Can be updated up to GC2 for an Imbalance Settlement Period;
  - Forecast Minimum Output must be zero unless Pumped or Battery Storage.
- Validation of Forecast Availability:
  - The first Imbalance Settlement Period in a submission must be at the start of the earliest Open Imbalance Settlement Period in the relevant Trading Day;
  - The final Imbalance Settlement Period in a submission must be at the later of the final Imbalance Settlement Period in the relevant Trading Day, or the final Imbalance Settlement Period in the latest Trading Day for which the gate for the submission of offers to the Day-ahead Market has closed.

Commercial Offer Data – 12/12

- More unit specific rules:
  - Energy Limit:
    - Applies to small subset of Energy Limited Units such as run-of-river hydro or units with physical limits on the energy they can generate in a day;
    - Represents energy the unit is capable of providing in a Trading Day;
    - Used in scheduling and dispatch to ensure the limit is not exceeded;
    - Default value if none submitted for a Trading Day is the previous day's Energy Limit (from Grid Code).
  - Pumped Storage Units will participate on a more commercial basis than in the current SEM:
    - No longer optimised to be scheduled to a Target Reservoir Level – Participants must take this into account in their ex-ante market trading, PND and COD submissions.
  - Pumped and Battery Storage Units submit Start Up and No Load Cost information with values equal to zero;
  - Dispatchable Priority Dispatch Units with zero marginal costs must submit a price of zero for their Decremental Price Quantity Pairs:
    - No formal Code definition of "zero marginal costs", it must be considered in the context of the Balancing Market Principles Code of Practice.
  - Demand Side Units submit a single Shut Down Cost instead of Start Up Cost (same functionality), and do not submit No Load Cost.