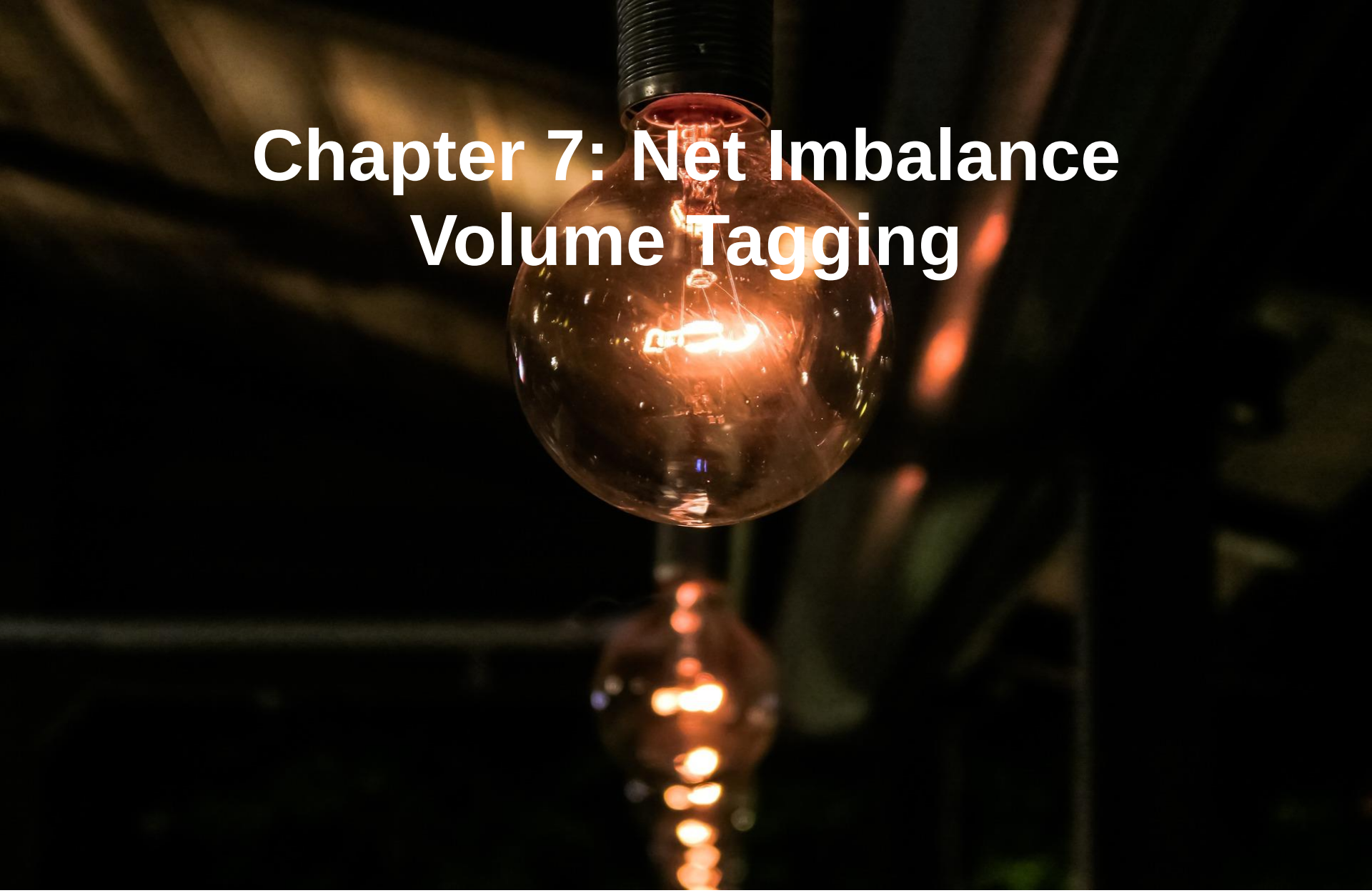

Chapter 7: Net Imbalance Volume Tagging

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Net Imbalance Volume Tagging

- The purpose of NIV Tagging after applying the Replacement Bid Offer Price is to ensure that there are now sufficient untagged actions to meet the Net Imbalance Volume Quantity, which can then be used as part of the PAR Tagging process to set the final Imbalance Price;
- The NIV Tagging process has similar functionality to the Classification step in the BETTA Market pricing approach, where it has steps which allow for actions which were previously flagged to be tagged and removed from setting the price for not being in-merit, or not being tagged and allowed to be included in setting the price due to being in-merit, depending on various circumstances;
- This is important as it is establishing a list of actions whose total volume equals the energy balancing requirement (QNIV) which are finally considered in-merit (despite any initial energy or non-energy classification) for the purposes of setting a final Imbalance Price. This ensures the final price is set by in-merit actions taken to meet the energy balancing requirement, which is important to enact the decision that the price has to be based on the costs incurred in keeping the system energy balanced.

Net Imbalance Volume Tagging

- This is done in a number of steps:
  - Initial NIV Tagging, where it is assumed that all actions in the opposite direction to the NIV are Initial NIV Tagged, and then all actions in the same direction as the NIV which have been SO or NM Flagged are Initial NIV Tagged;
  - Considering the Initial NIV Tagging, calculate the Residual Tagged Quantity, which is the volume of additional actions which need to be tagged or untagged in order to have a number of untagged actions equal to QNIV;
  - Apply the Residual Tagged Quantity on the tagged and untagged actions in the ranked set in different ways depending on the sign of QNIV (if system imbalance is long or short), and depending on the sign of QRTAG (if more action need to be tagged, or if some actions need to be untagged, in all cases either tagging or untagged a volume of actions in the ranked set equal to the volume of the Residual Tagged Quantity;
  - The result is a value of Net Imbalance Volume Tag (TNIV) for each action in the ranked set which determines whether or not that action can be included in setting the final Imbalance Price.

Net Imbalance Volume Tagging

- When tagging additional actions, it is done in order of the actions least “in-merit” to most “in-merit”, i.e. the most “expensive” actions get tagged first:
  - If QNIV is positive, then the highest priced Incs get tagged first until the volume of additional actions tagged equals QRTAG;
  - If QNIV is negative, then the lowest priced Decs get tagged first until the volume of additional actions tagged equals QRTAG;
- When untagging actions, in the general this is done in order of the most “in-merit” to the least “in-merit”, i.e. the least “expensive” actions get untagged first:
  - If QNIV is positive, then the lowest priced Incs get untagged first until the volume of the actions untagged equals QRTAG;
  - If QNIV is negative, then the highest priced Decs get untagged first until the volume of the actions untagged equals QRTAG.

Net Imbalance Volume Tagging

- The benefits of this approach include the following:
  - It identifies a set of balancing energy actions to meet the Net Imbalance Volume in all cases;
  - Actions which are accurately identified as non-energy will be tagged out first before starting to tag previously unflagged actions, which ensures that energy actions are not unnecessarily NIV Tagged (and thus prevented from setting the final Imbalance Price, potentially arbitrarily removing the marginal energy action) when it is possible to accurately exclude non-energy actions on the basis of their flags;
  - It will also ensure that, where necessary to further tag actions to meet the NIV, expensive non-energy actions that were not positively identified by SO Flagging are removed from setting the Imbalance Price by being NIV Tagged:
    - While we are confident that the SO flagging process will result in a more accurate identification of non-energy actions, this approach caters for cases where resultant unflagged actions exceed the NIV and ensures a robust price formation in all circumstances.
  - It ensures that the least expensive unflagged actions used to meet the NIV set the price, particularly for a non-marginal value for QPAR.

Net Imbalance Volume Tagging

- Outcomes of this NIV Tagging approach include the following:
  - If there are insufficient flagged balancing actions to tag in order to meet the NIV, the most expensive remaining actions are then tagged until the NIV is met through untagged actions:
    - Since there are some non-energy actions which were not identified through the SO Flagging approach, this approach assumes that the most expensive actions were the ones that were taken for non-energy reasons.
  - If there are too many Actions which were flagged but then not tagged (the action is said to be "untagged" or "unflagged") are now able to influence the imbalance price again after not being able to set the Marginal Energy Action Price:
    - Because of the Replacement Bid Offer Price process, only those actions which are more "in-merit" than PMEA will be able to have their own price influence the final Imbalance Price, either entirely for a small, very marginal value for QPAR, or being one of the actions considered in the average for a larger non-marginal value for QPAR.
  - This is particularly important when using a non-marginal QPAR value to set the final price:
    - It allows actions which are in merit (i.e. have more economic prices than PMEA) and meeting the Net Imbalance Volume to be included in the average when calculating the price;
    - When QNIV is positive, can result in PMEA or a lower price;
    - When QNIV is negative, can result in PMEA or a higher price.

Net Imbalance Volume Tagging

- Untagged actions can still contain the price of actions in the direction opposite to NIV for purposes of PAR Tagging if that was the marginal price, due to the Replacement Bid Offer Price mechanism;
- An action which was initially identified as being non-energy, but which is “in-merit” when considered against the Marginal Energy Action Price, can be included in setting the final imbalance price;
- If tagging additional actions it could have the effect of removing PMEA from the prices considered in the final Imbalance Price calculation, with the less expensive, more “in-merit” prices being used in the PAR Tagging and final imbalance price calculations;
- With this functionality it is also possible to ensure that Untagged actions contain only actions in direction of NIV
    - This has the potential to result in a reduced volume over which to calculate average prices for non-marginal values of QPAR, but the volume over which this can be calculated is the Net Imbalance Volume so only actions with volumes meeting the energy balancing requirement can be included in setting the average price.

Net Imbalance Volume Tagging

- Since NIV Tags are used to identify actions which are non-energy for the purposes of the Imbalance Pricing process, it is also used in a Market Power Mitigation functionality in addition to the SO Flags:
  - Units which are NIV Tagged in any Imbalance Pricing Period in the Imbalance Settlement Period will be settled using their Complex Bid Offer Data to calculate their Bid Offer Acceptance Quantities and Prices;
  - Again this only applies to the settlement process: the unit's Simple Bid Offer Data may still be used in the pricing process if the other requirements for its use are met.