

# **The Devil in the details: the factors determining the selection of intrazonal congestion management methods across Europe**

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## **Abstract-**

**The European electricity market is becoming increasingly interconnected, raising questions about how intrazonal congestion management, typically governed by national regulations, interacts with the coupled cross-zonal markets. A major concern is the lack of information regarding intrazonal congestion management methods. This paper addresses this issue by examining different ways in which European transmission system operators (TSOs) use third-party resources to manage congestion in short-term electricity markets. We create a decision-tree-based classification to represent all identified congestion management methods and select three cases for comprehensive evaluation using predefined assessment criteria. While doing so, we identify a trade-off between efficiency and ease of implementation. The balance between these two factors is determined by the severity of the congestion. In a severely congested grid, locational signals are critical, requiring a better alignment between the network representation in the market clearing and the physical network constraints. When the congestion is less severe, TSOs can choose other congestion management methods based on factors such as the predictability of congestion and resource availability. These findings shed light on the complexities of congestion management in an integrated European market and can inform future policy decisions.**

**Index Terms-** Congestion management; Zonal markets; Intrazonal congestion; Electricity markets; Redispatch markets; Bid filtering

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