

# ***MARKETS VS. REGULATED PRICING FOR ACCESS TO DISTRIBUTION NETWORKS***

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## **Overview**

This paper looks at the efficient allocation of access to existing and future grid capacity. We focus on a distribution setting and often refer to the European context, but many of the arguments and conclusions apply to transmission level or other countries as well. The analysis departs from the concept of restricted rather than universal network access and evaluates assigning access rights via auctions against offering them at regulated prices.

Historically in electricity distribution, users have had universal access rights to their full connected capacity and operators supplied the corresponding network cost-efficiently. This system is challenged by increasing efforts to integrate new network users and by the efficiency potential from flexible users. As a consequence, selective restrictions in access rights have been introduced and it has become more common for network operators to buy back access rights from users by compensating them for access restrictions. A scheme that assigns differentiated access rather than correcting originally inefficient allocation could be the next, fundamental step.

Access rights are initially assigned by the network operator and may subsequently be traded among all stakeholders. In this paper, we focus on market-based approaches for both stages, although the initial allocation may be via grandfathering or regulation. Efficient approaches for the assignment of access enable the system operator to alleviate existing constraints and ideally also help to refrain from grid expansion where instead coordination mechanisms can manage the grid.

We analyse potential dimensions for access restrictions, i.e. direction, location, depth, time and firmness, concerning their value and implication for system efficiency. We also discuss the potential product design for access to network capacity. Next, we assess the efficient provision of network access and review market rules for auctions in view of the main concerns in literature: market power, collusion, complexity and transaction cost. Additionally, we consider secondary trading to correct the initial allocation over time.

## **Methods**

- assessment of literature and recent experiences concerning
  - o the efficiency potential of restricted network access in electricity distribution grids
  - o the assignment of network access in electricity as well as in other energy or network sectors
- evaluation of specific auction design options concerning their general suitability for the context of access to electricity distribution and their ability to contain market power and collusion and to handle complexity and contain transaction cost
- analytical comparison between the assignment of network access via auctions (with special focus on the product-mix-auction) and regulated pricing using simplified examples of distribution grid settings
- discussion of challenges and potential merits of auctions and regulated pricing, focussing on the availability resp. revelation of information on the demand side and on the flexibility potential

## **Results**

The paper reassesses the concerns of earlier literature concerning auctions for access to electricity networks, particularly limited liquidity, monopoly (or monopsony) power and collusion (Newbery 2003, Helm 2003, Mc Daniel 2003) as well as complexity and transaction cost (Stern & Turvey 2003, Yarrow 2003). We find that some earlier conclusions do not apply today, given the advances in auction design and computing catering for ever more complex allocations and given the merits of revealing demand side information in view of increasingly heterogenous and flexible network users.

It is shown for simplified examples how a product-mix-auction assigns access efficiently. The allocation and incentives compare to those from regulated pricing while requiring less information on the demand side and potentially even revealing information on potential flexibility.

## Conclusions

We conclude that auctions are promising for the initial assignment of access as well as subsequent trading and demonstrate in principle how more market based-approaches can be applied to network access. In typical distribution contexts concerns of market power and transaction cost can be addressed in the market design. Thus, auctions are a tool for network operators to efficiently allocate access given a less predictable demand side and an increasing need to incorporate users' elasticities. However, network operators overall incentives for efficient development of the network are likely to remain an issue for regulation.

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