# The future of auctions in the energy system

Auctions beyond renewable electricity

AURES II webinar, 15 December 2021

# Auctions for the support of charging infrastructure

Decarbonisation of the transport sector

# Motivation

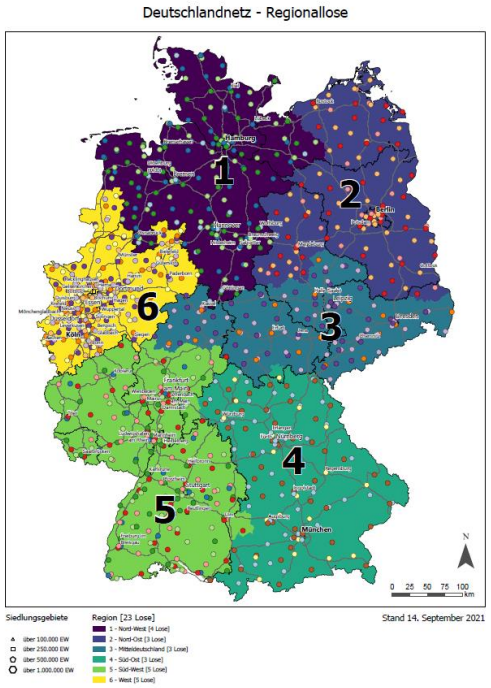
- Transport is currently responsible for about one quarter of energy-related greenhouse gas (GHG) emissions in the EU ➔ Green Deal seeks a 90% reduction in these emissions by 2050
- In 2020, passenger cars were responsible for about 12% of the total EU GHG emissions and about 60% of transport GHG emissions
- Multitude of potential instruments to support the decarbonisation efforts
  - CO2 fleet targets for newly sold cars
  - CO2 fleet targets for trucks
  - **Infrastructure for alternative fuel vehicles**
  - Quotas for sustainable zero carbon fuels
  - Carbon pricing
- Focus in the presentation and report on:
  - Infrastructure for private and light-duty (plug-in) electric vehicles (EVs)
  - Germany's auctions under the Fast-Charging Law
- Other cases:
  - SA.55201 – Charging infrastructure for electric vehicles (Schleswig-Holstein, Germany)
  - SA.49276 – Development of a recharging infrastructure for plug-in hybrid and purely electric vehicles (Romania)
  - SA.63718 - Development of a recharging infrastructure for electric vehicles and hydrogen refuelling stations (Poland)

# EVs in Germany

- Around 500,000 EVs and almost another 500,000 PHEVs in Germany in October 2021
- Purchase of EVs supported with up to 9,000 € (BEV) and up to 5,625 € (PHEV) ➔ but: **lack of charging infrastructure**, especially in rural areas, thus not attractive (“chicken-egg-problem”)
- ➔ support for charging infrastructure in Germany:
  - smaller solutions: support budget of around 800 mn € allocated via first-come-first-served/competitive procedure
  - **large, fast-charging infrastructure: support of 900 locations with up to 4-16 HPC-points each via competitive procedure/auctions (➔ AURES II scope) + 200 locations on the highways**

# Auction design (1/2)

- Scope: allocation of support for HPC charging infrastructure (rated power of at least 200 kW per charging point)
- Sealed-bid, static, pay-as-bid auction conducted in three rounds: 1) prequalification round, 2) submission of preliminary bid, and after negotiations with each bidder, 3) submission of final bid
- Site-/location-specific: 23 lots in 6 regions; each lot further divided into several “search areas” (radius of 2 km) with given number of HPC charging points
- Prequalification criteria:
  - Bidder needs sufficient experience with charging infrastructure
  - No need for specific sites (yet)
  - Performance bond after being awarded
- Bidder concentration rules:
  - Only 10 bidders per lot admitted after the first round (prequalification)
  - Each bidder can only be awarded for 1 lot per region AND 3 lots in total



# Auction design (2/2)

- Award rule: multi-criteria (65% price – 35% “quality”)
  - Price: remuneration of CAPEX (only once) and OPEX (per quarter) as lump sums; should be based on true costs ➔ bid price: one absolute number in €
  - Quality: 1) availability of sites (15%), 2) user-friendly equipment (15%), and 3) design concept (5%)
- Remuneration:
  - Lump sums for CAPEX and OPEX as awarded in the auctions
  - Customer tariffs capped at 44 ct/kWh (indexed)
    - Payments to government of 17.85 ct/kWh
    - Electricity price of around 17 ct/kWh
    - ➔ Range of around 9 ct/kWh
- Support period: 8 years
- Obligations for bidders:
  - Use of renewable electricity (can be GOs)
  - Storage instead of grid connection possible
  - (Merchant) operation of at least 8 years after the end of support period

# (Expected) Results

- First results available: in total 400 applications for the 23 lots; on average, around 17 applications per lot (“double-digit number of applications per lot”)
- (Static) efficiency:
  - Apparently enough competition, but limitations wrt number of bidders and lots/regions might have decreased competition and thus efficiency
  - Multi-criteria award procedure might harm efficiency
  - Combinatorial bids not foreseen
  - Lack of transparency and simplicity, but a lot of flexibility for bidders
  - Capped customer tariffs

# (Expected) Results

- Effectiveness:
  - Oversubscribed (a priori effectiveness achieved!)
  - Realisation rates not yet clear (penalties high enough? ➔ avoid real option bidding and/or “strategic bid”)
- Actor diversity:
  - Seller concentration rules
  - Several lots designed for small, local actors
- Impact outside of the auction design
  - Interaction with existing market actors and HPC locations

# Conclusions (and questions)

Conclusions

- Good first step to ramp up infrastructure for EVs
- Impact on other market actors should be evaluated
- Actor diversity seems more important than static efficiency
- Quite complex scheme with a lack of transparency

Questions

- Any other country examples? Auctions not only for infrastructure?
- Will auctions continue to play a role in the transport sector?
- Complexity vs. flexibility?
- Are the penalties high enough (wrt effectiveness)?

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**AURES II**

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