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Retail markets, distribution grids and end consumers

Exchange between the US and Germany

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1 Retail markets and rates
At retail competition level

- Fully liberalized retail markets - from industrial to household level
- Offers determined by distribution network area (due to costs, contracts)
- Usually more than 100 offers, differ by costs, cost structure, power quality (green), service
- Default supply service by local incumbent (usually bundled with distribution network)
- Households: ~30% served by third party, ~70% by local incumbent (incl. 30% by default tariff)
Retail rates: Households
(based on annual consumption of 3,500 kWh)

Source: Agora, BNetzA data 2018, *Agora estimates
Advanced metering infrastructure

• Metering is a competitive business
• Default responsibility with distribution network
• High data security standards delayed AMI rollout
• Split of metering and communication unit and their responsibilities
• AMI mandatory for consumption above 6,000 kWh/yr (above average household demand)

⇒ Rollout can start in 2019
2 Distribution networks: structure, costs and regulation
880 distribution networks (DN)

- Range in size from a couple of thousands to 5 million customers
- Networks legally unbundled from competitive supply and retail businesses (but not with regard to ownership)
- Majority owned by municipally-owned utilities
- Regional DN mostly owned by investor-owned utilities

Source: https://www.enet.eu/newsletter/aktuelle-preisanalyse-fuer-das-segment-kleingewerblicher-kunden
Network fees becoming more heterogenous

- Rural networks with high renewables penetration and low demand becoming more and more expensive
- Demand in cities far from supply is affected less and is cheaper

Network fees for households in 2018 (at 3500 kWh/yr) Source: Bundesnetzagentur
880 distribution networks (DN)

- Approximately 200 DN regulated by federal authority (Bundesnetzagentur)
- 680 are regulated by state regulators
- Revenue regulation with (low) performance factor
- In 2018, of €24 billion in total revenues, approximately €18 billion are from distribution network

Performance-based regulation

The effect of incentive-based regulation: in the long term revenue caps and costs, and hence also the charges for network users, decrease.

Source: Bundesnetzagentur
## Transparency of regulation and network cost drivers?

<table>
<thead>
<tr>
<th>Unternehmen</th>
<th>Jahr</th>
<th>beschiedene EOG</th>
<th>angepasste EOG</th>
<th>Regulierungskonto saldo des Jahres</th>
<th>Zu- bzw. Abschlag aus der Auflösung des Saldos des Regulierungskontos</th>
<th>Summe der Aufwandsparameter I nach § 14 Abs. 1 Nr. 3 ARregV</th>
<th>Summiertener Kapitalkosten aufschlag</th>
<th>Dauerhaft nicht beeinflussbare Kosten des Jahres laut EOG-Beschluss</th>
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Source: BNetzA
Network fees

- Industrial customers: low volumetric fee & high annual peak demand charge
- Commercial customers: higher volumetric fee & lower annual peak demand charge
- Residential customers: volumetric charge & (increasing) fixed charges

⇒ No time-of-use network tariffs
⇒ Rebates for interruptible load (residential heat storage systems, electric vehicles, heat pumps)
3 Rooftop PV and self-supply
PV-Tariff in Germany

- One federal Feed-in-Tariff by size of PV kW-peak
- No variation by local value of solar
- No variation by use (self-supply vs. feed-in)
- Roof top PV FiT: \(~11 \text{ €Ct/kWh granted for 20 yr}\)
  (compare to \(30 \text{ €Ct/kWh demand tariffs}\))

⇒ PV self-supply is the main business case
⇒ Full feed-in is not (is much less) profitable
Potential for PV self-consumption is limited, even in commercial and residential sector

- **Commercial customers**: 140 TWh / Jahr
- **Residential customers**: 130 TWh / Jahr

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<th>Sector</th>
<th>Annual demand of sectors</th>
<th>Potential for PV self-consumption*</th>
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Prognos (2016)

* compensating power taken from the grid
Comparison of PV-Tariffs

- Size of rooftop PV driven by demand, not by available surface
- High complexity for self-supply
- Higher costs than necessary

⇒ Cost-efficient rooftop PV needs a “sell-all” tariff

Source: Ossenbrink
About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

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