



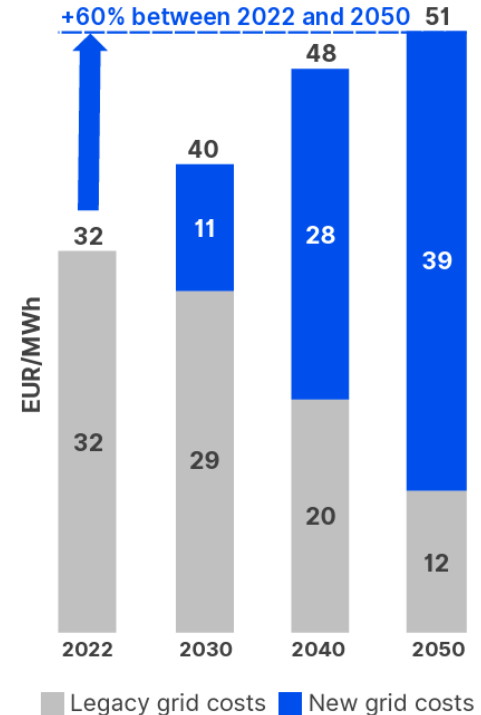
European Union Agency for the Cooperation  
of Energy Regulators

# Getting the signals right: Electricity network tariff methodologies in Europe

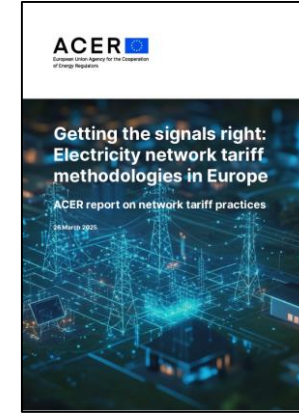
Akos Hofstadter, Energy System Needs  
Department

3 June 2025, BNetzA 'Netzentgeltsystematik'  
Workshop, Bonn

- Meeting ambitious climate and energy goals **requires additional grid capacity**
- Annual **grid costs expected to increase** (by 50-100% by 2050)
- **Economic signals** to all actors are **key** to enhance efficiency and mitigate cost increase



*Evolution of total grid costs\**



## System operator revenues

- Fair return (risk/reward)
- CAPEX-OPEX neutrality
- Output-based incentives

## Network tariff design

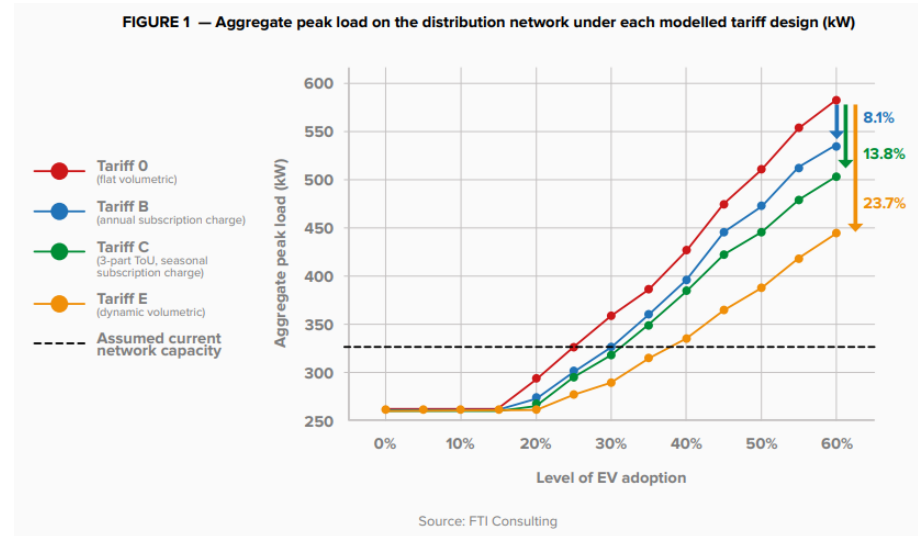
- Cost recovery
- Cost reflectivity
- Applicability

## Growing potential...

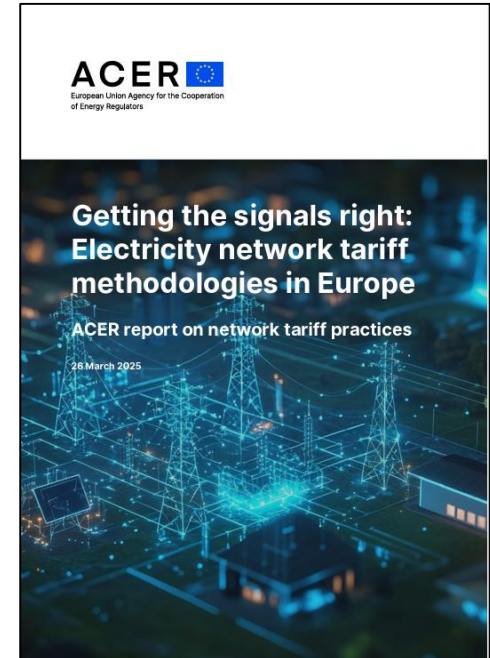
- **Share of network charges** in the final bill is expected to increase
- Increasing **flexibility** of users enhances impact of cost reflective tariffs (see figure on the right)

## ...but still challenges

- **Complex** process; multiple objectives involve trade-offs
- No one-design-fits-all solution; **local system context matters**



- **No binding harmonisation** via network code, but tariff setting principles are set in EU law and a cap is applied on generation charges
- ACER issues a **biennial report on network tariffs**; includes in-dept review, **recommendations to regulators** and **national practices** for inspiration
- European Commission's [Affordable Energy Action Plan](#) puts forward a design of network charges (Q2 2025) incentivising flexibility and efficient investments



- Network costs are cascaded in a **top-down paradigm**
- Cost cascading from **transmission to distribution** exist in all assessed countries
- More diverging practices observed across voltage levels within transmission / distribution
- **Inverted power flows** (due to distributed generation) may challenge current practices

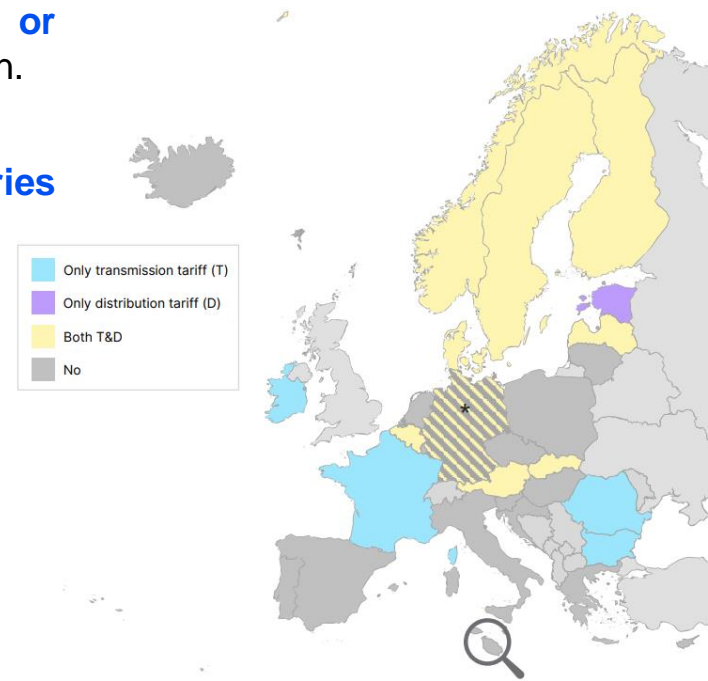
*For inspiration:*

- **Portugal:** specific tariff regime for self-consumption using the public grid, exempting these users from charges of upper voltage to reflect their use of the network.

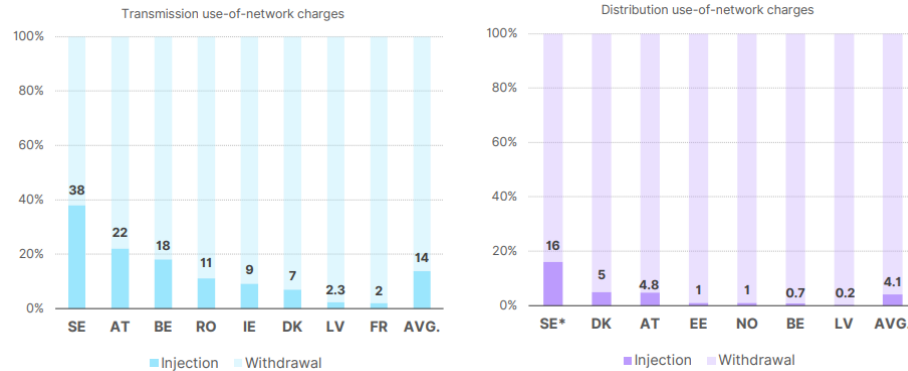
# Producers may need to be (more) exposed to tariff signals

- **Producers often do not pay** for network services (except a shallow connection charge); **providing no temporal or spatial signals**, while **costs are often driven** by generation.
- **Generation/load split** of network costs significantly **varies** across the countries.

Application of injection charges in Europe



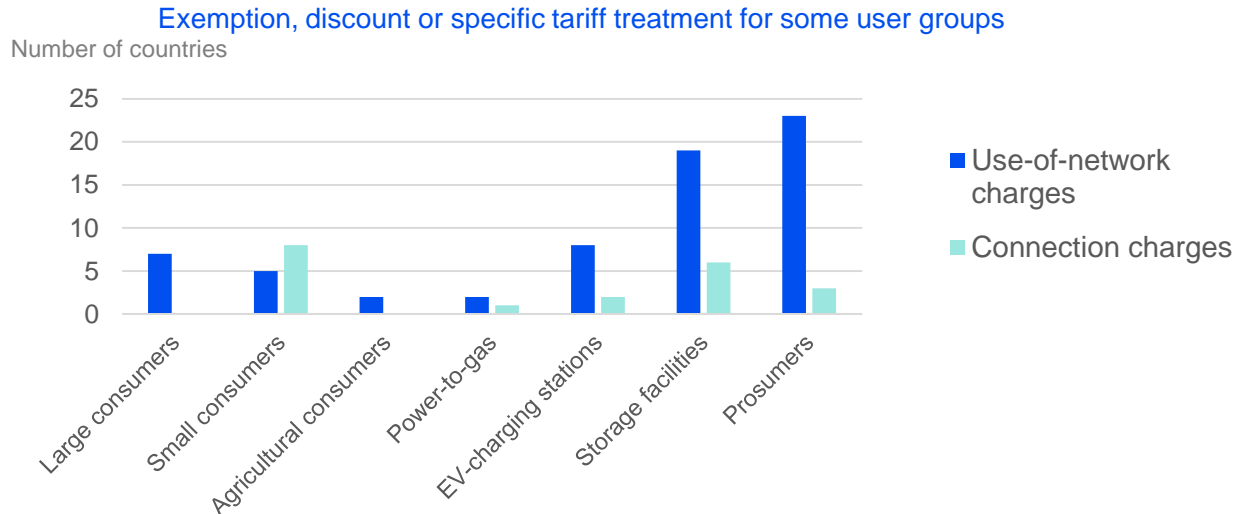
Generation/load split within use-of-network charges, 2023



(\* ) The value for Sweden refers to regional DSOs

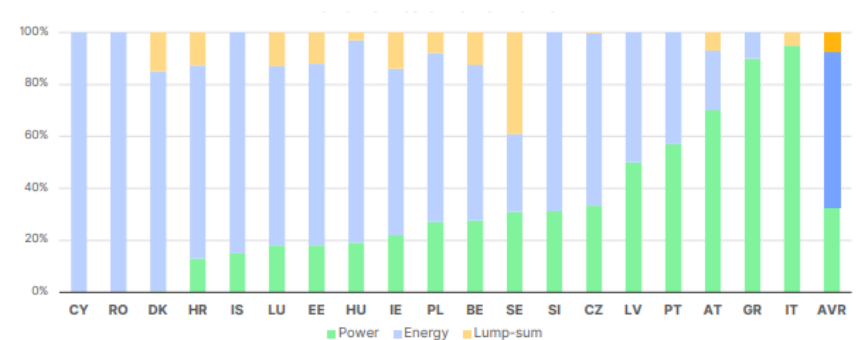
(\* ) Germany applies a negative injection charge

- National frameworks often provide **exemptions, discounts or specific tariff regimes** (e.g. based on technology, commissioning date, user profile)
- While they benefit specific groups of network users, specific tariff regimes can increase the overall bill if they are not justified by **system beneficial impacts** or cost offsets

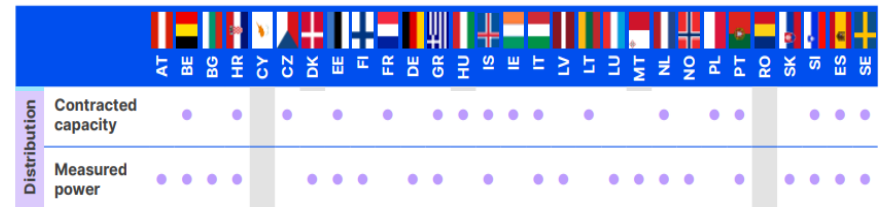


# Network charges should correlate with key cost drivers

- Most countries apply a **mix of tariff bases**; their **weights vary** across the countries
- A gradual **shift towards more power-based** charges has been observed, which is deemed appropriate by ACER
- **Caveat:** the design elements of power-based (and other) charges are crucial, as they can facilitate or hinder demand response



Share of tariff bases in distribution use-of-network charges



Capacity/power-based network charges in Europe

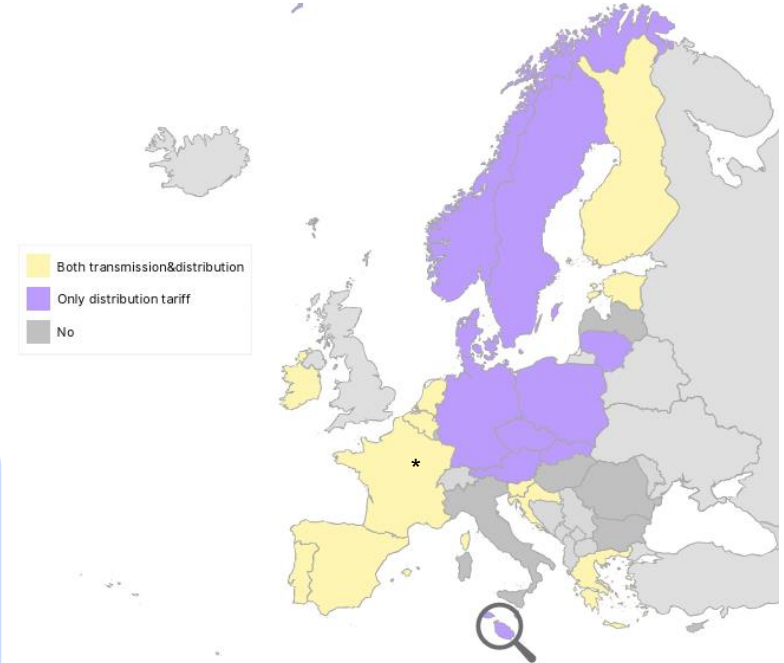
## Linking network cost to network peak usage is key:

- **Time-of-use signals** for withdrawal have become common in Europe, but **some fall short** on capturing the system peak or only applied to a very **limited** extent
- **Dynamic** network tariffs are very **rare**; 4 countries reported some dynamic or market-based elements in network charging

### For inspiration:

- **Belgium:** combination of yearly and monthly peak power-based charges
- **Spain and Slovenia:** multiple time variations of the power-based network tariff component

Static Time-of-Use tariffs in Europe



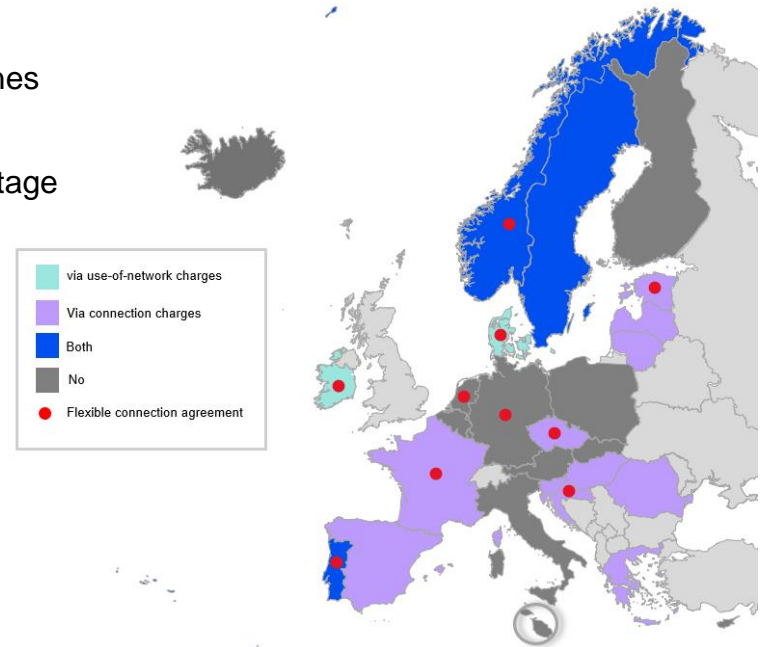
(\*) In Germany, from 2025, optional ToU tariffs are introduced for interruptible devices on the low-voltage level

## Locational signals (multiple forms exist) can advance flexibility and mitigate congestion:

- **Wholesale prices** provide locational signals between market zones (but not within a market zone)
- **Local markets** for system operation services are often at early stage
- Spatially differentiated tariffs (beyond one-off deep connection charges) are **applied in few countries**
- **Flexible connection** agreements (FCA) are frequent; they have potential, but entail some risks

### For inspiration:

- **Norway:** Tariffication based on marginal grid losses in each node
- **Denmark:** Lower producer charges in high demand surplus areas
- **Ireland:** Locational element in the generation charge
- **Romania:** Charging producers for losses due to excess generation
- **Slovenia:** Locational dynamic pricing
- **The Netherlands:** FCAs with network charge discount



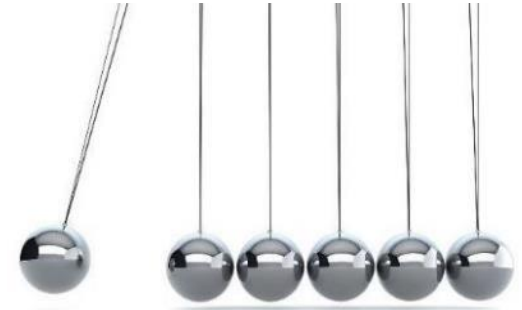
Locational signals in transmission

2/3 of EU Member States introduced **changes** recently, often in line with ACER recommendations

Tariff reforms are **sensitive** and often face **distributional effects**.

Political pressure and stakeholder **opposition can slow down and even reverse** network tariff reforms:

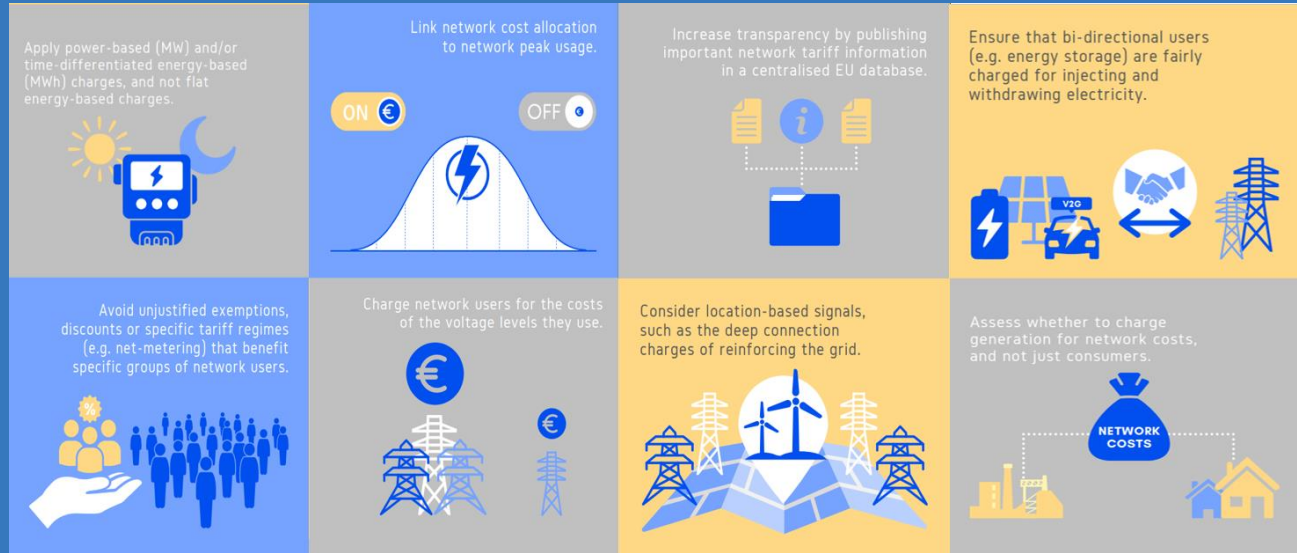
- Regulatory **independence** in network tariffs is key for enduring benefits
- **Early engagement** is instrumental



ACER plans to increase transparency by publishing relevant network tariff information in a **centralised EU database**

# Thank you!

## Any questions?



Summary of ACER recommendations



European Union Agency for the Cooperation of Energy Regulators

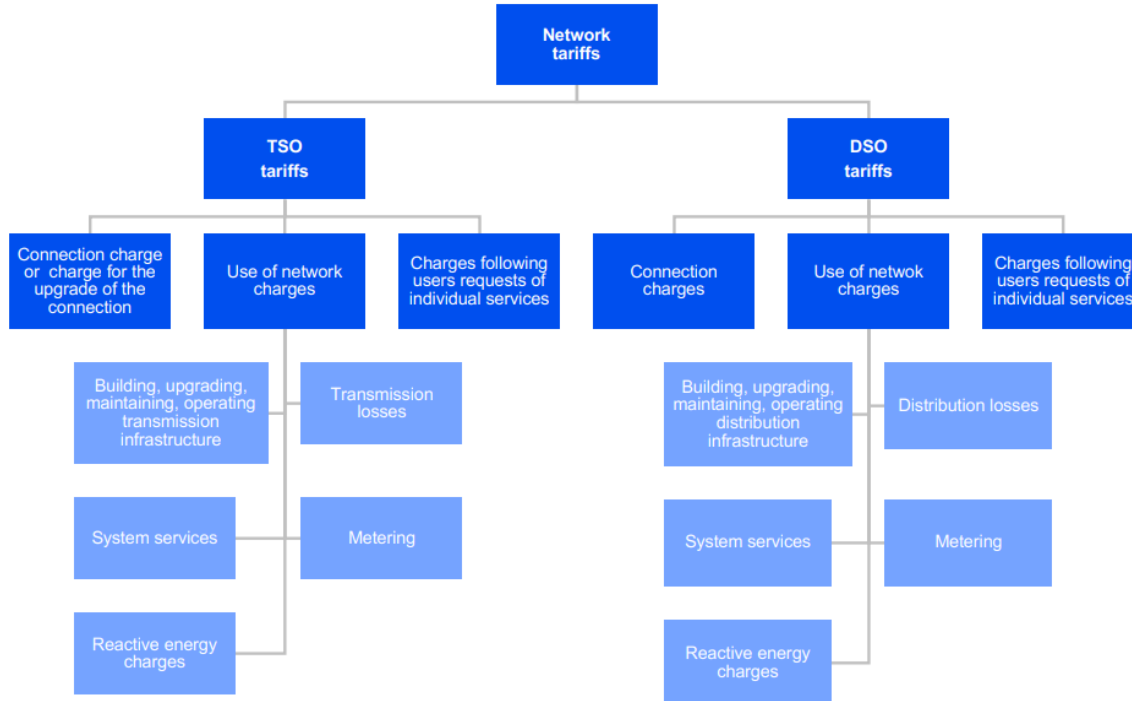
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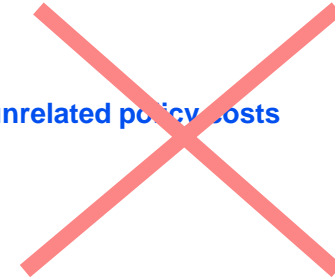
# Back-up slide

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# Different terminology hinders comparability



unrelated policy costs



Definition of network tariffs