

Transnational Rules for Charging Device  
Control by DSOs

## **Introduction, background, targets**

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## The distribution network for the energy transition

- **Energy transition**
  - Is taking place in the distribution network
  - Revolution in the traditional electricity system
  - Changing legal framework
  - Space heating (heat pump or infrared heating)
    - Parallel promotion of local and district heating
- **Traffic turnaround**
  - **Electric mobility**
  - **Electrification of public transport**



Photo credits: Wels Strom GmbH

## Actual loading

## Exemplary suburban low-voltage network

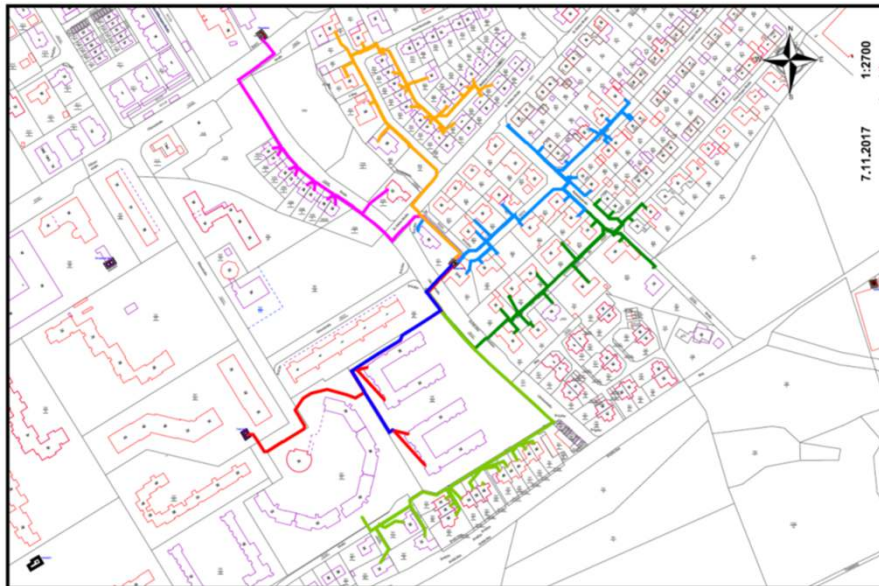
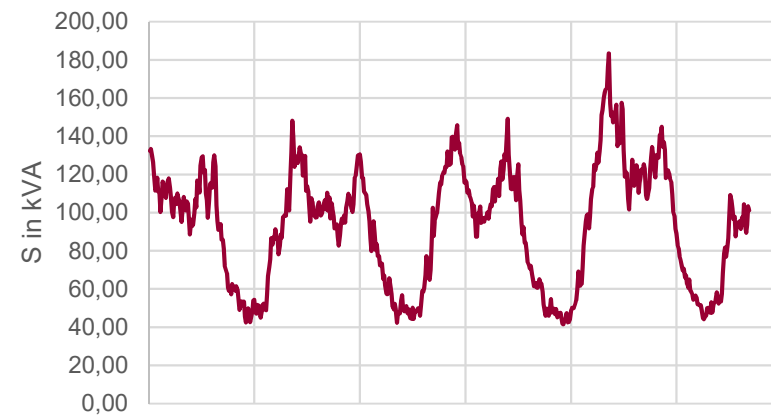
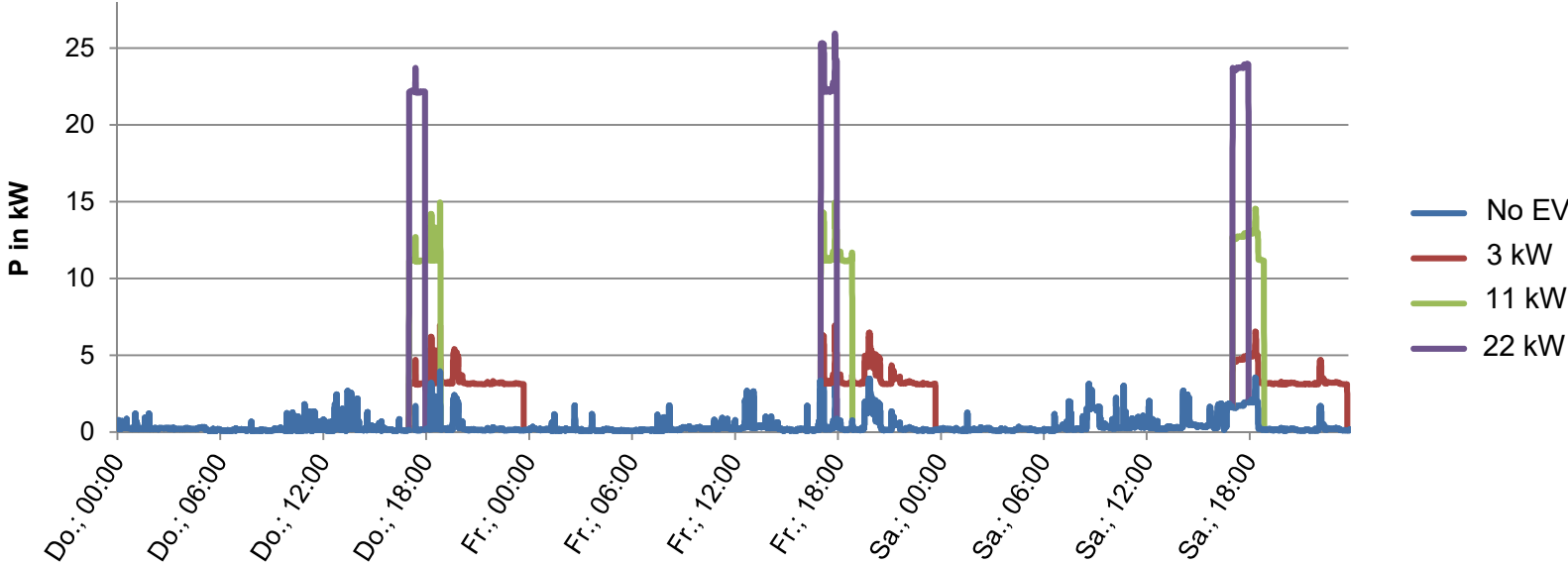


Photo credits: Geographic Information System, Wels Strom GmbH



250 kVA transformer  
189 households  
 $S_{\max} = 190 \text{ kVA}$   
 $\sim 1 \text{ kVA / household}$

# Comparison load profiles without / with EV



Source: Vorarlberger Energienetze GmbH

## electric mobility

### Network planning: Changing procedures for the DSOs

- The DSOs take EV seriously
- Therefore, changing network planning procedures (exemplary)
  - Increasing the planning capacity per connection point (Reserve for Charging point and heat pump)
  - Shortening the maximum length of a low voltage feeder
  - Higher density of secondary substations
  - Increasing use of adjustable local grid transformer
  - Implementing of intelligent secondary substations to get more information of the low voltage grid



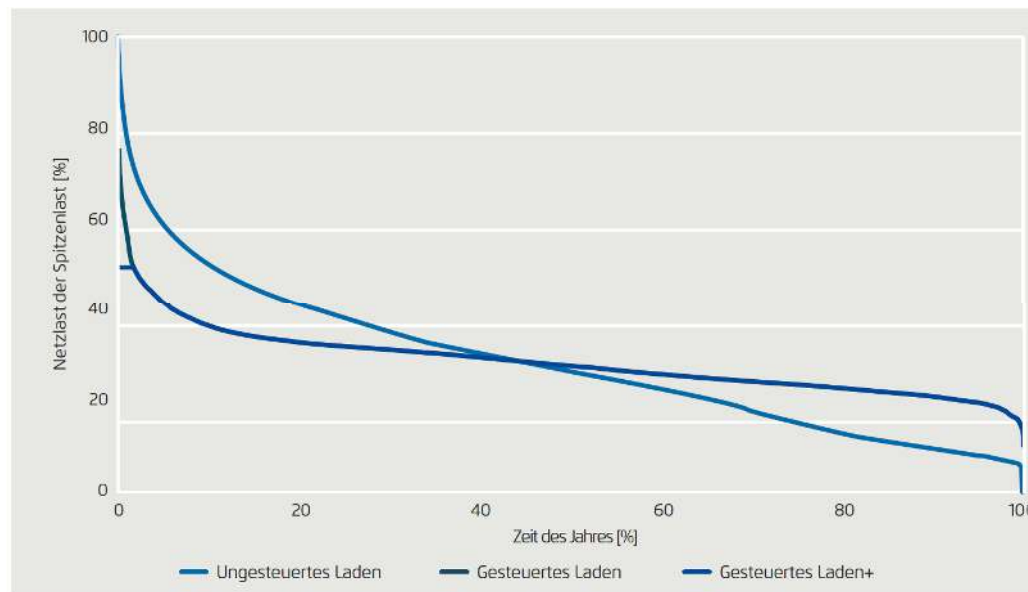
Photo credits: Geographisches Informationssystem, Wels Strom GmbH

## Future uncertainty from the perspective of the DSO

- Grid expansion is significantly slower than the assembly lines in the automotive industry
- Technological development in future (for example hydrogen cars) call for a defensive investment policy
- Studies show control of charging reduces the additional costs for grid investments due to EV by 50 % [1]
- **But:**
  - There is not yet a standardised technical solution for the controlling of the charging infrastructure on the market
  - Many DSOs use different techniques for controlling devices in the grid (ripple control, clock, timers, supervisory control system)
  - Applies to Austria: the smart meter is intended for remote reading of the energy values – it is not designed for controlling loads

[1]: [Agora, Verteilnetzausbau für die Energiewende - Elektromobilität im Fokus, 2019](#)

## Controlled vs. uncontrolled charging of EV



Source: Agora Studie: Verteilnetzausbau für die Energiewende, 2019

## Conclusion

- In addition to the necessary grid expansion charging stations must be able to be controlled
  - Simple solution first (and fast) – the final goal is a digital interface
  - The controllability must be anchored in the regulations
  - Functioning reporting procedure for charging stations
- 
- Together we will make the traffic turnaround a success



Photo credits: Wels Strom GmbH





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