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PLUG'N ROLL – das führende Ladenetzwerk für Elektroautos in Graubünden und Ihr Partner für Elektromobilität.

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Grid Integration of E-Mobility and Renewables

Dr. Andreas Beer
Expert in Product Research and Engineering

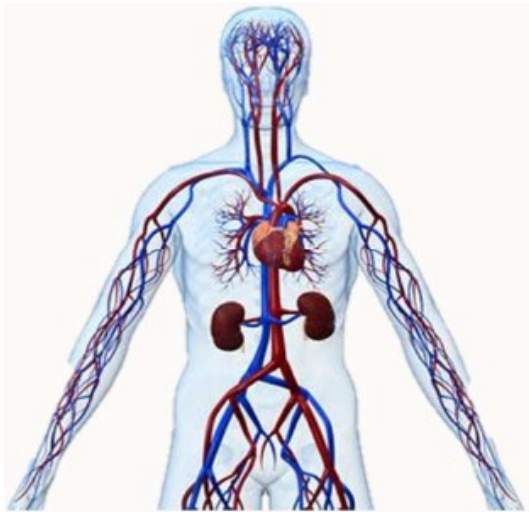
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«What is happening when everyone gets home in the evening and plugs his e-vehicle?»



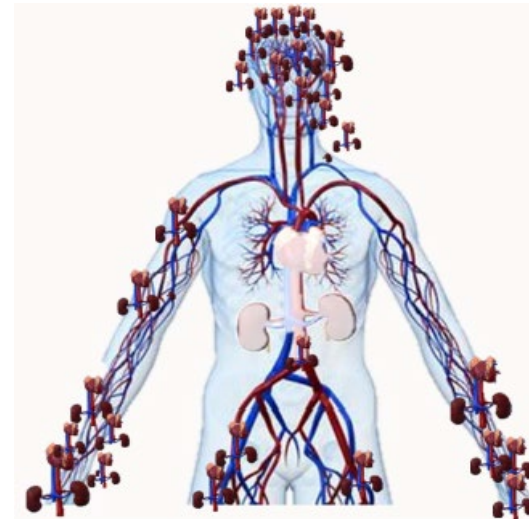
Grid operators are challenged by a very demanding surgery

Up to now: centralised

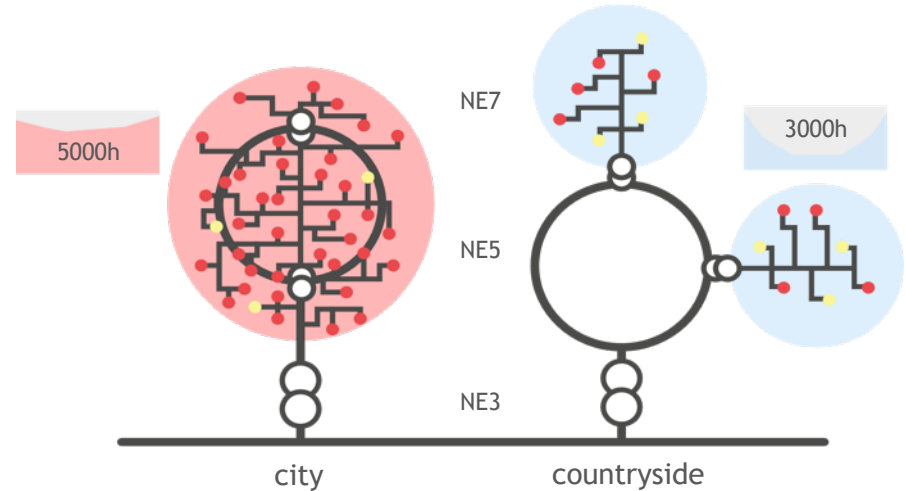
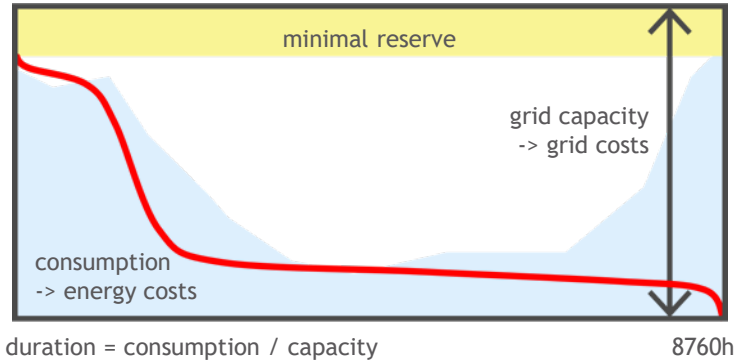


Quelle: Internet

In future: decentralised

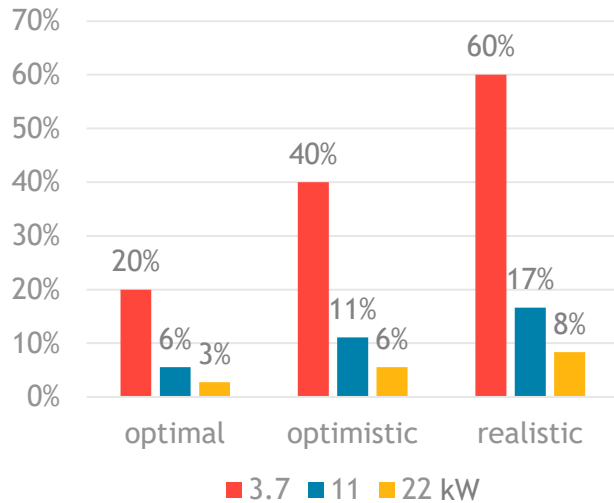


Maximum load peak defines needed grid capacity on each voltage level

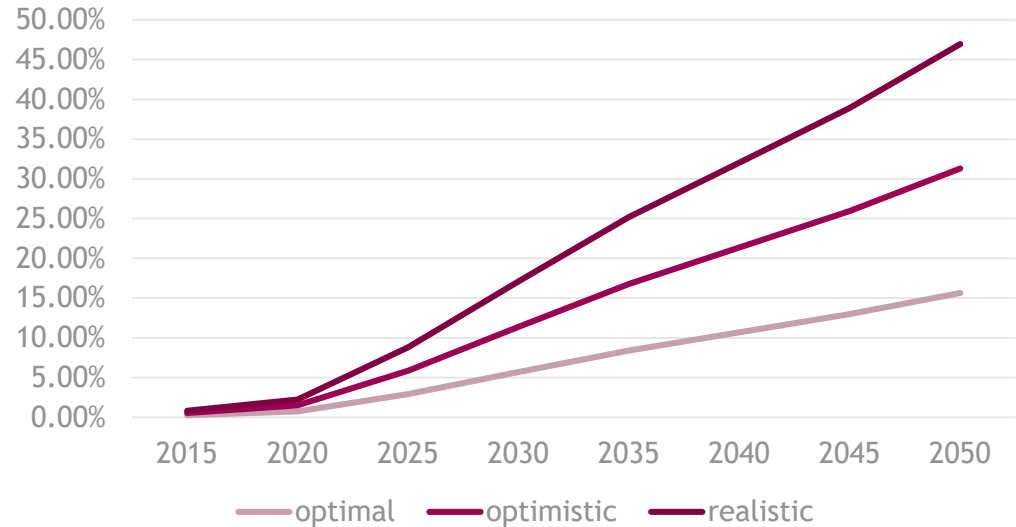


Regional grid: Load management is needed to damp own additional load peaks

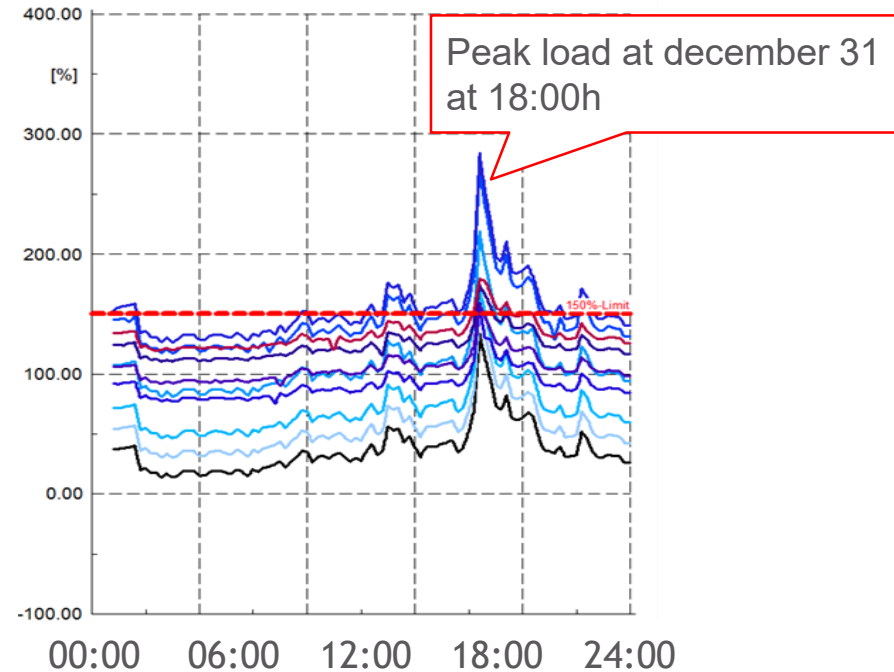
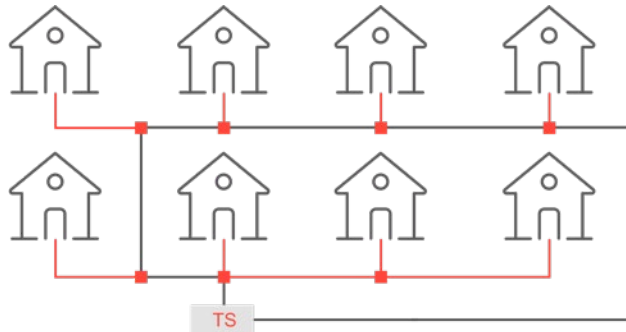
Charging simultaneously



Resulting additional peak load on high-voltage level



Local grid: Peak loads of EV charging do not match with RE production peaks



Grid and supply security can not be taken for granted!

Copper



- High costs of investments
- Long lifetimes
- Long procedures

Control



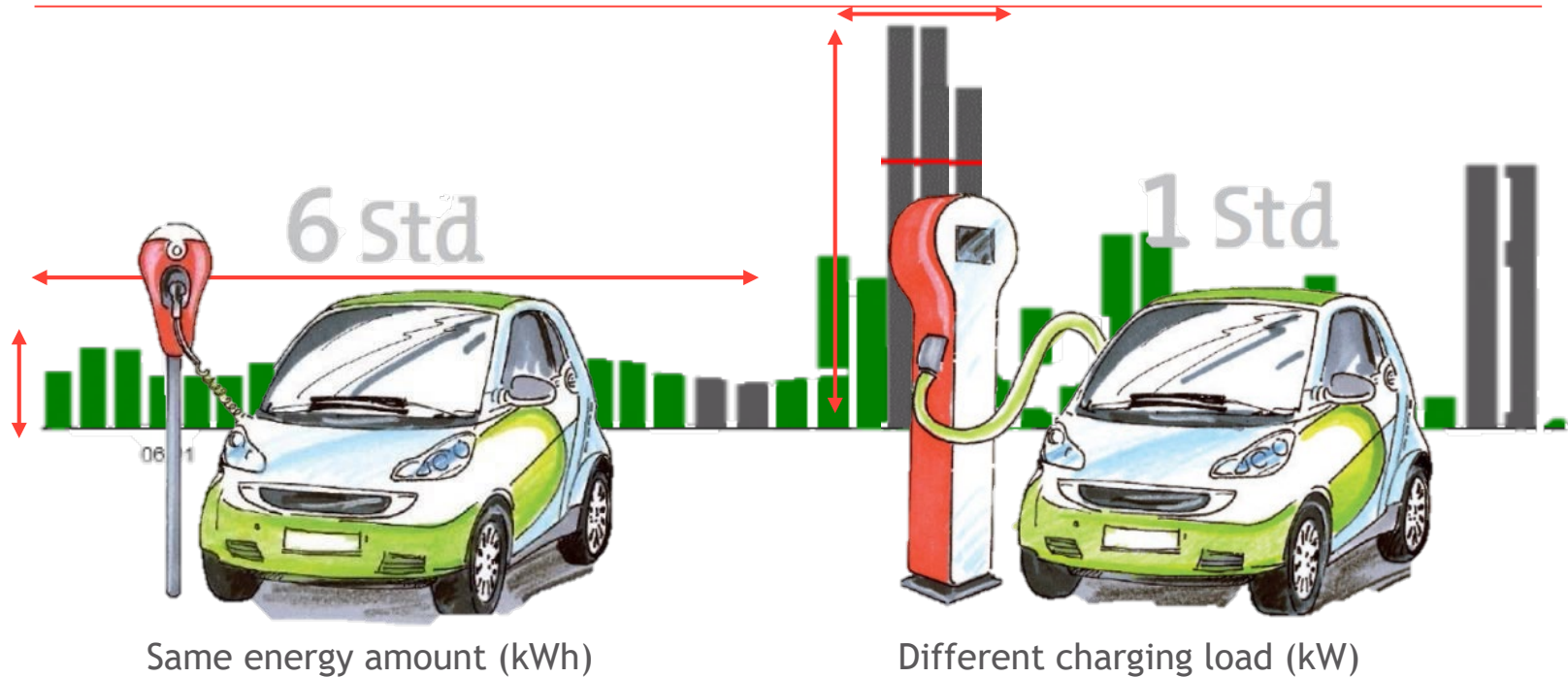
- Limited control by grid operator
- Limited acceptance by the customer

Consumer



- Consumer influence is at 100% of consumption and behavior

Incentivisation of charging behavior means tariffs depending on time and load



Intelligent load management requires clear roles and competences



- E-Driver

needs / behaviour / flexibility

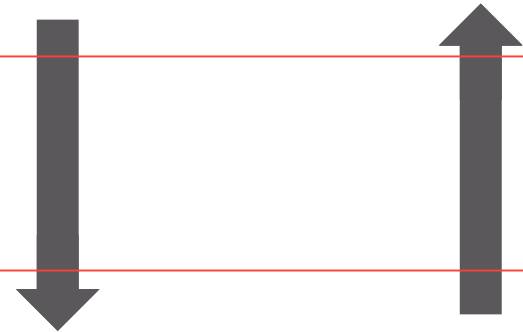


- Infrastructure Manager

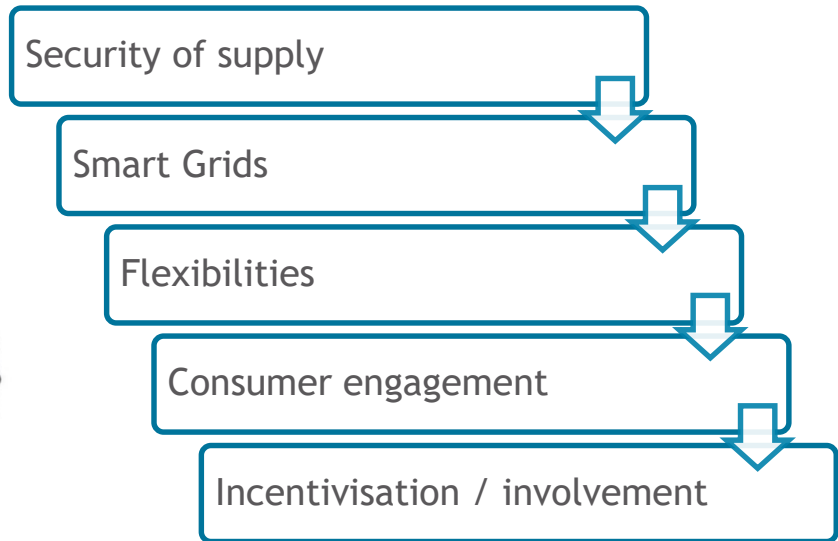


- Grid operator

service / tarif / incentive



Consumer engagement is crucial for the success of smart grids



«What is happening when everyone gets home in the evening and plugs his e-vehicle?»



customer involvement



THANK YOU FOR YOUR ATTENTION

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