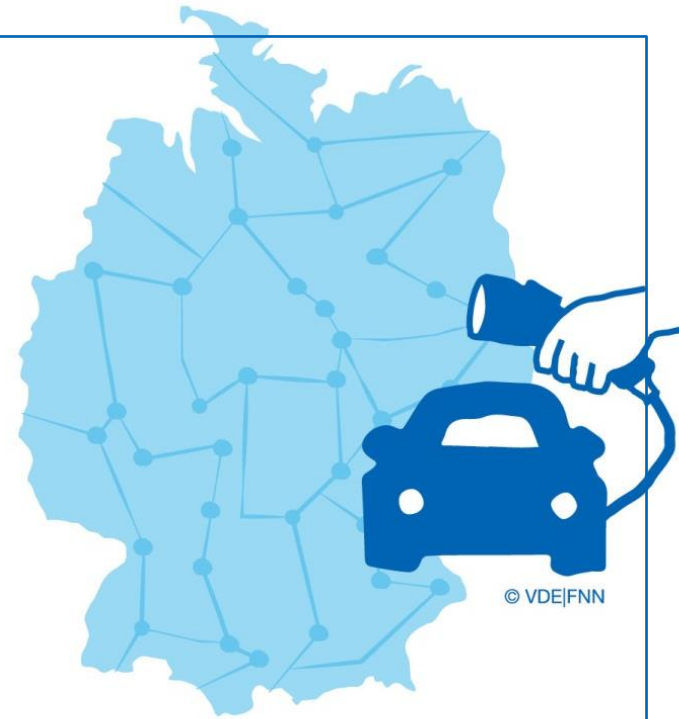


# Power Grid is the Backbone for E-Mobility

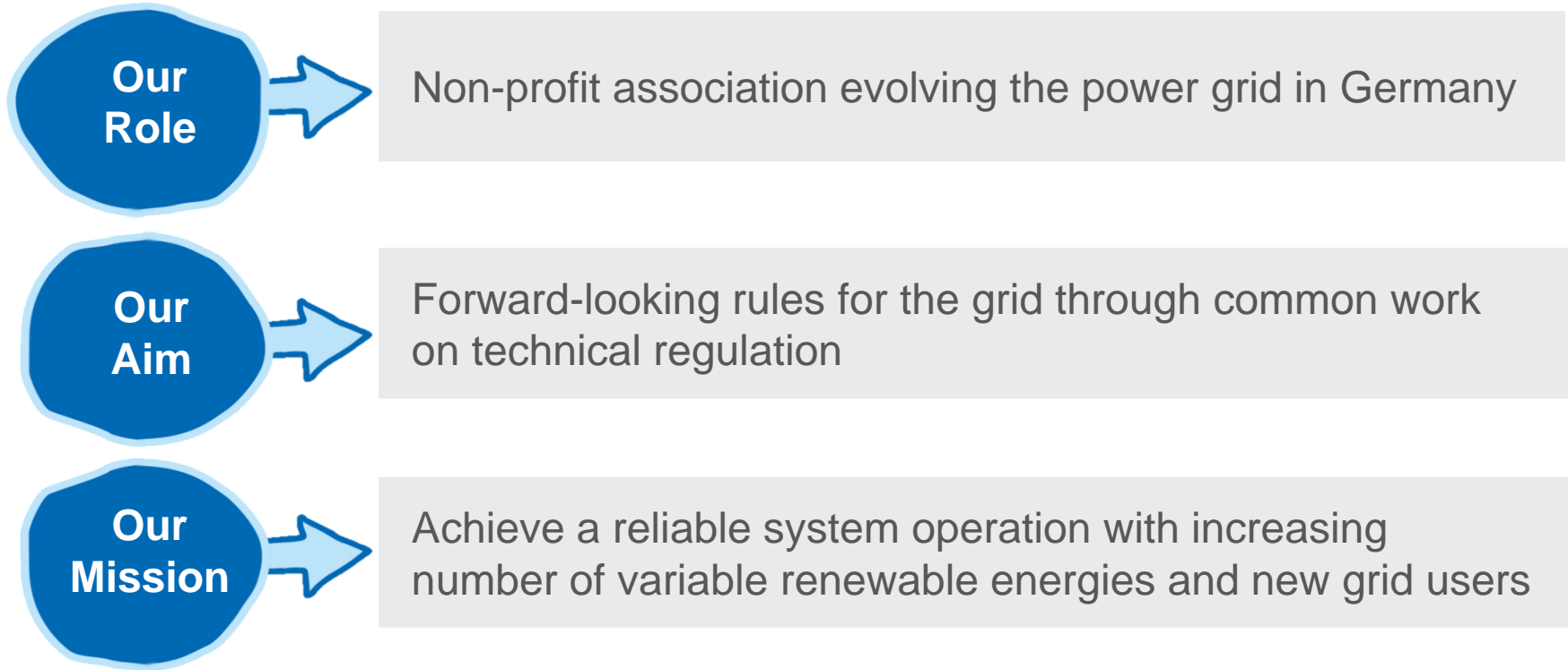


Florian Regnery

Network Technology/Network Operation Forum in the VDE (VDE|FNN)

Stockholm, 15.10.2018

# VDE|FNN in a nutshell



# VDE|FNN – common platform for grid experts

## Our common work

VDE|FNN is powered by more than

**500** voluntary experts:

- Network & plant operators
- Manufacturers
- Etc.

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Stakeholders jointly develop solutions for upcoming technical challenges

- Grid-focused
- Consensus-based work

## Our contribution

- Application rules e.g. connection codes
- Guidelines e.g. metering specifications, tool box for voltage control
- Positions e.g. e-mobility, 5G
- Studies



**VDE** FNN

## E-mobility: new challenges ...

- New grid-users with high energy demand putting the network under strain
- Simultaneous charging leading to demand peaks

## ... and new chances for the grid.

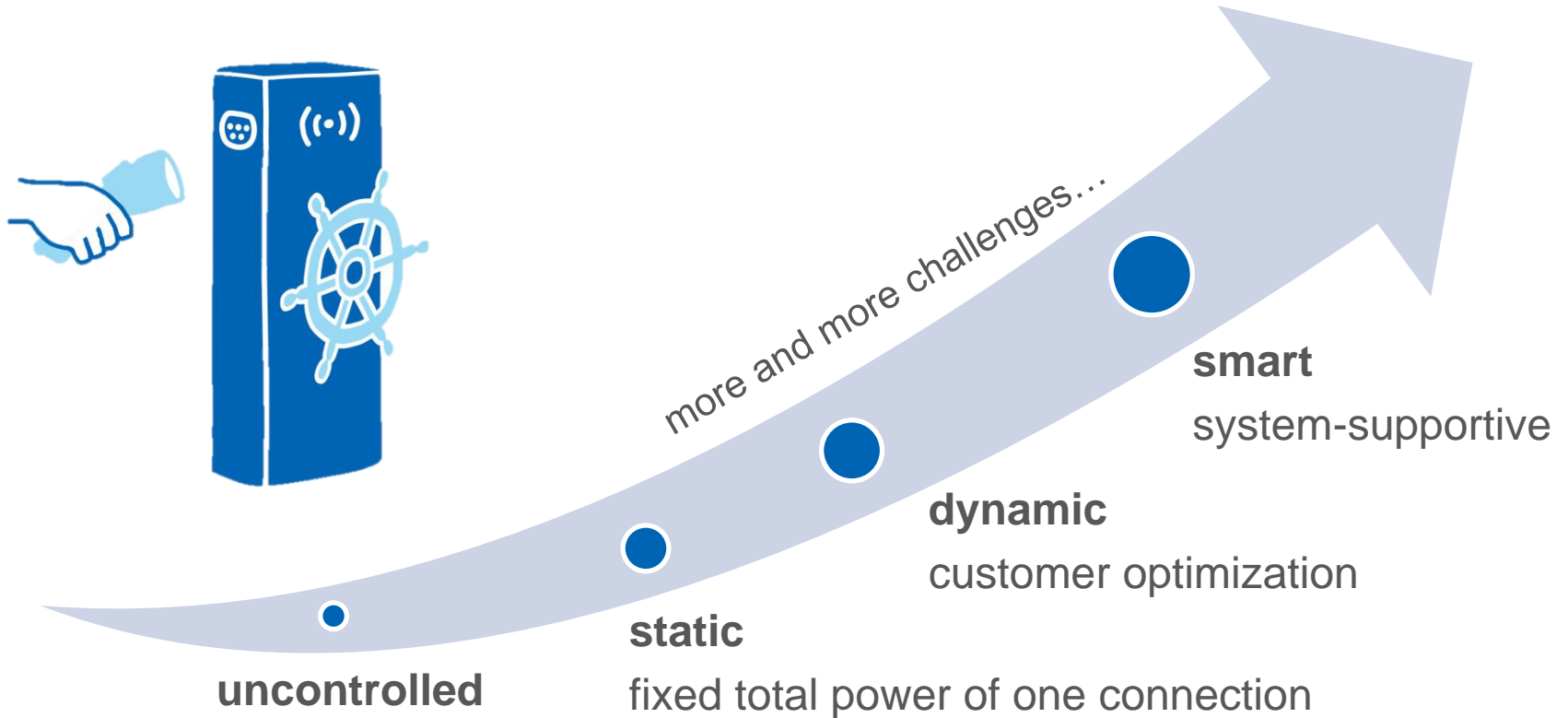
- Cost-effective integration to avoid too big grid expansions
- Additional services to provide flexibility and support integration of VRE



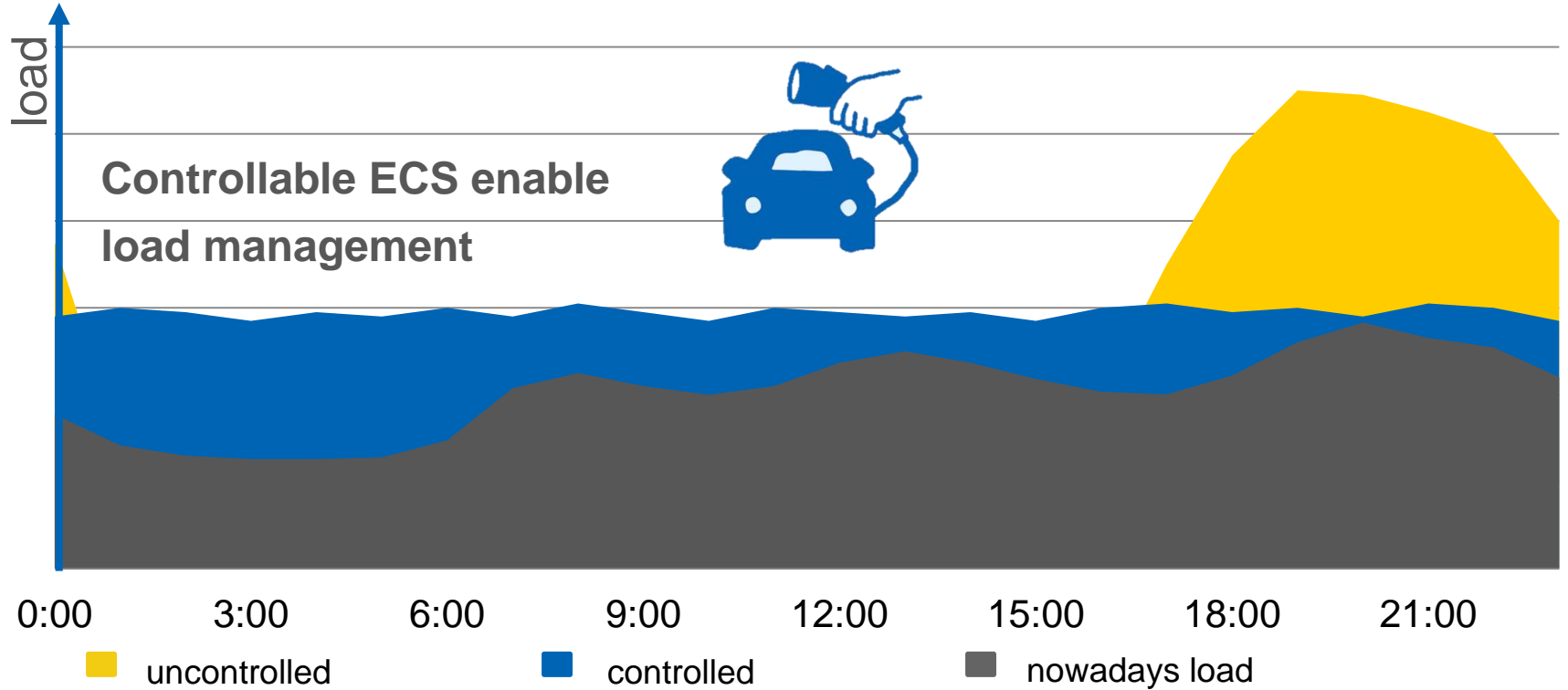
**E-mobility should help to...**

... enable a higher penetration of VRE  
... increase flexibility of the system

# Path towards smart charge management



# Smart Charge Management utilizes the grid more effectively



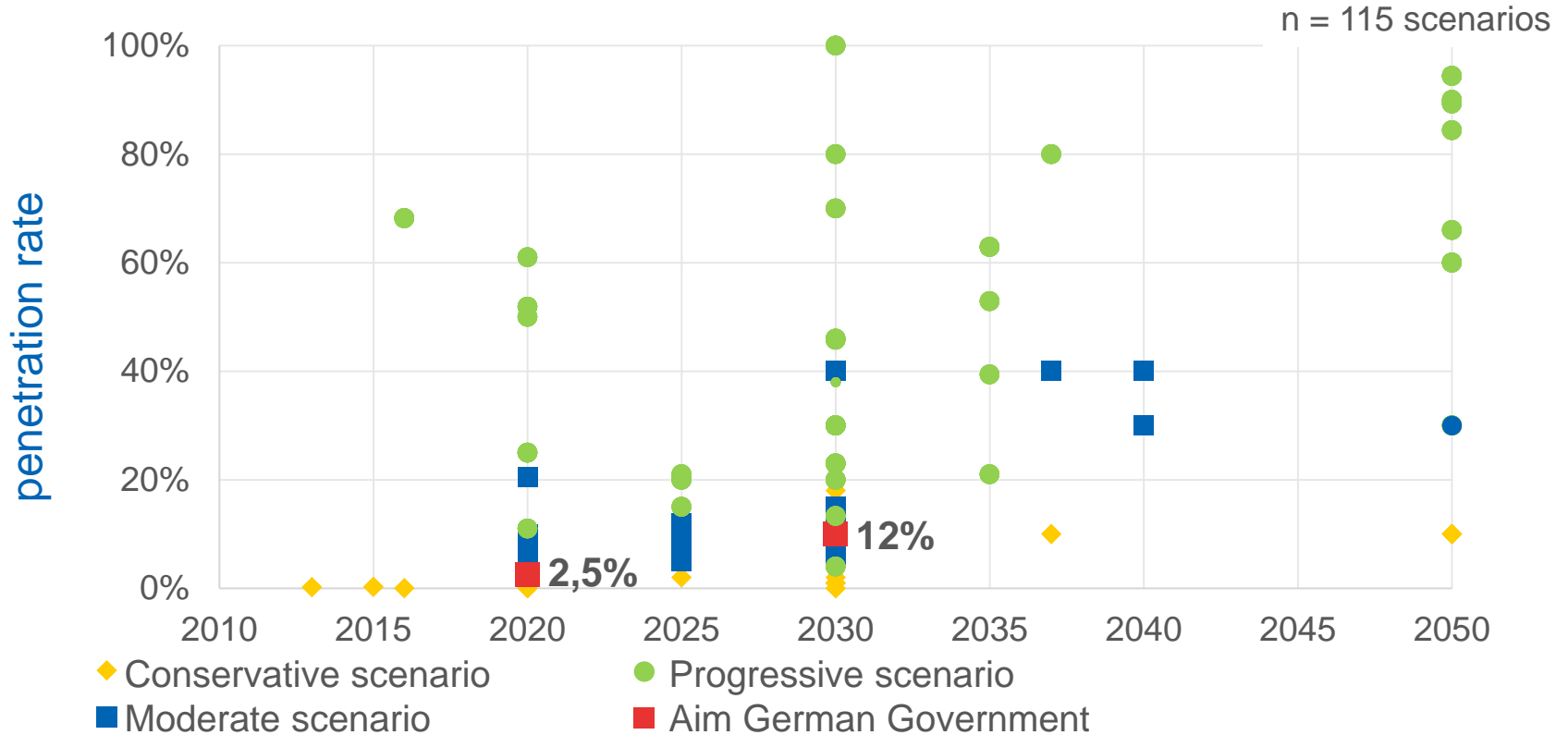
# Power grid integration study: Key findings

- Meta study
- Based on 52 national und 8 international studies and research projects
- All studies with focus on power grid integration of e-mobility
- Available for free in November:  
[www.vde.com/fnn](http://www.vde.com/fnn)

**VDE** FNN **bdew**

- Path for e-mobility penetration still unclear
- Central parameters for future network planning
  - simultaneity
  - local network situation
- ECSs must be responsive to network signals
- Flexibility through e-mobility is possible
- Changes in regulatory framework are needed

# Path for e-mobility penetration is still unclear



Source: FNN-BDEW-Meta-study, 2018



# Power grid integration study: Key findings

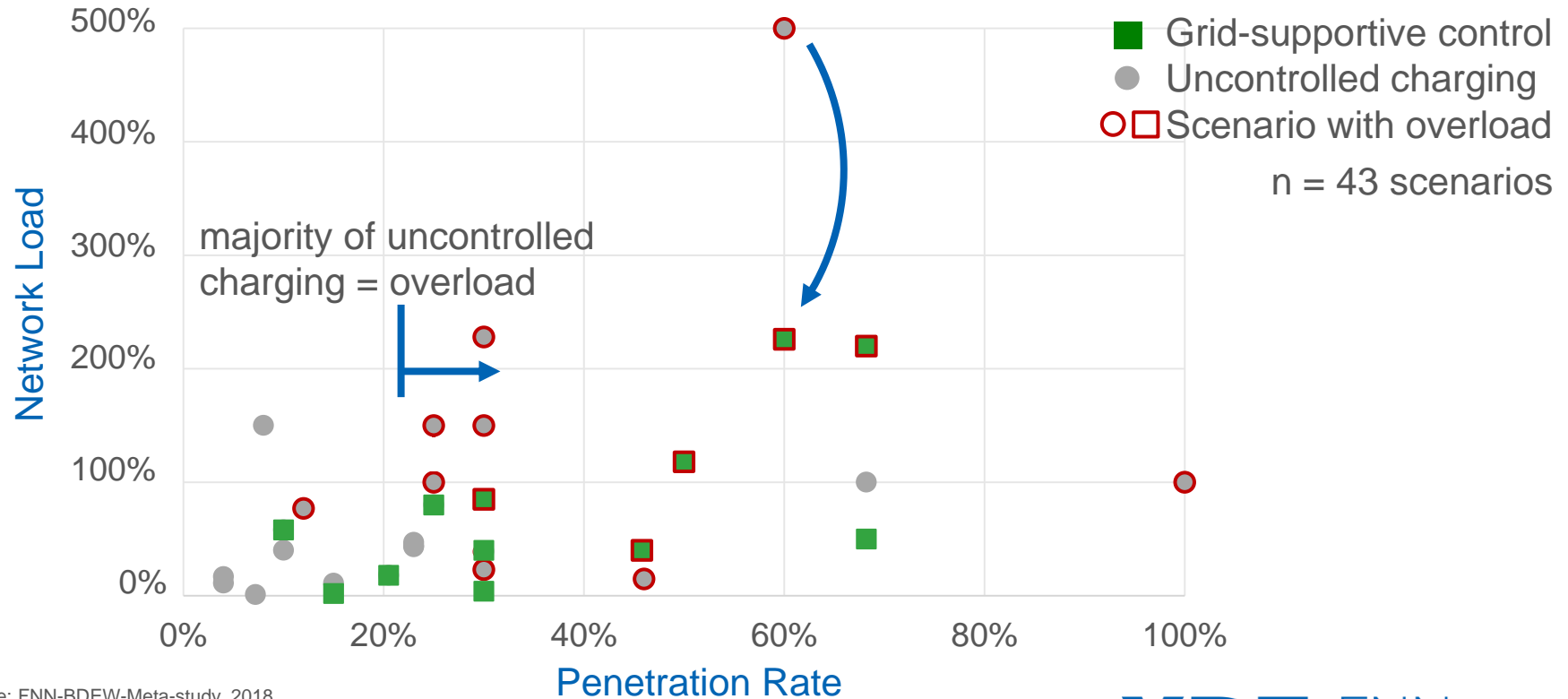
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# Significant impact through grid-supportive control



Source: FNN-BDEW-Meta-study, 2018

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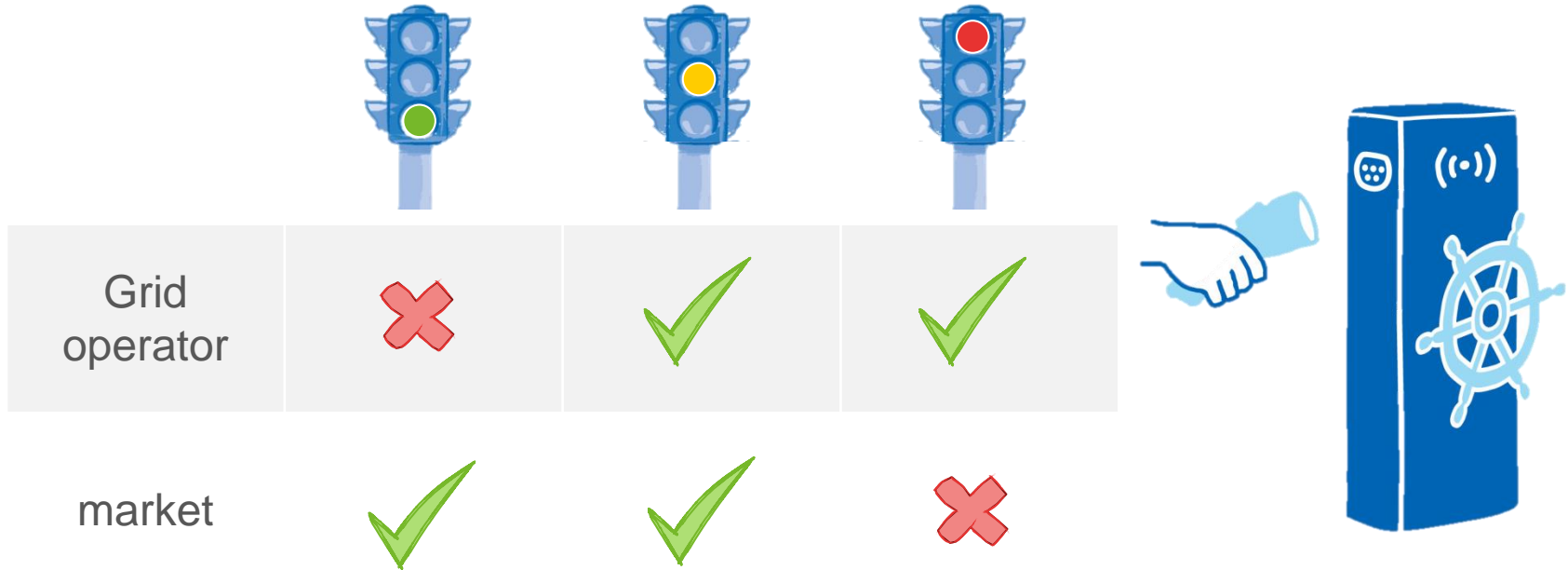
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## FNN-Position

- Charging stations must support network operation in critical situations
- Three-phase power charging must become standard
- Solid planning corridors are a prerequisite for efficient network expansion
- E-mobility should provide flexibility in the future energy system

# Grid operator signal must have priority in critical situations





## FNN-Position

- Charging stations must support network operation in critical situations
- Three-phase power charging must become standard
- Solid planning corridors are a prerequisite for efficient network expansion
- E-mobility should provide flexibility in the future energy system

# Main take-aways

➔ **E-mobility should help to integrate renewables and bring flexibility to the system**



➔ **Grid-supportive control helps with the integration**



➔ **Grid operator signal must have priority in critical situations**



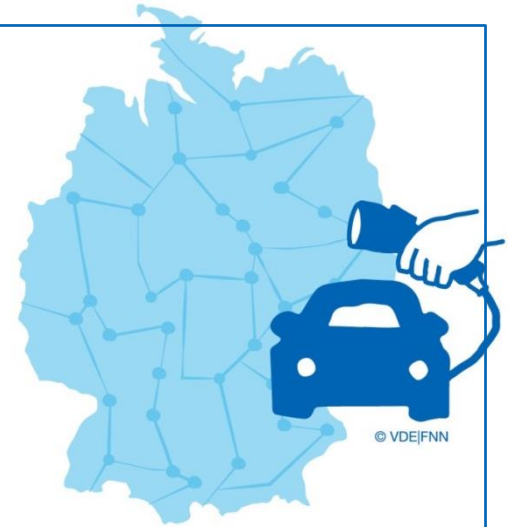


new VDE|FNN campaign for consumers: [backbone.vde.com](https://backbone.vde.com)



# Future Power Grid Solutions

We are evolving the grid



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