

Energy Storage in Germany and within the EU

Markus Rosenthal, 17 November 2021



Agenda

- **BVES – Energy Storage System Association**
- Energy Challenges
- Applications of Energy Storage in Germany
- Regulatory framework
- Conclusions

The German Energy Storage Association (BVES)

- The BVES is the **industry association** of energy storage companies in the **EU** and **Germany**
- The BVES represents all technologies **across the sectors** of electricity, heat and mobility
- The BVES is active at **national, EU** and **international** level

Members - Selection



Thüringer
Energie



High Performance Battery Systems



forward-looking energy



A company of ENHANCE



ENTWICKLUNG & VERWALTUNG



Leistung für Chemie und Industrie



DLR



power to the people



TESLA



Die Energie



ENERGY
TUBE



Fraunhofer



energy solutions



TRUST YOUR ENERGY.



Technik fürs Leben



Karlsruher Institut für Technologie



-All for dreams



Elektroanlagen



Stromversorgungstechnik GmbH



The Energy Storage Company



MIT ENERGIE VOR DAT



Precisely Right.



POWER FROM INNOVATION

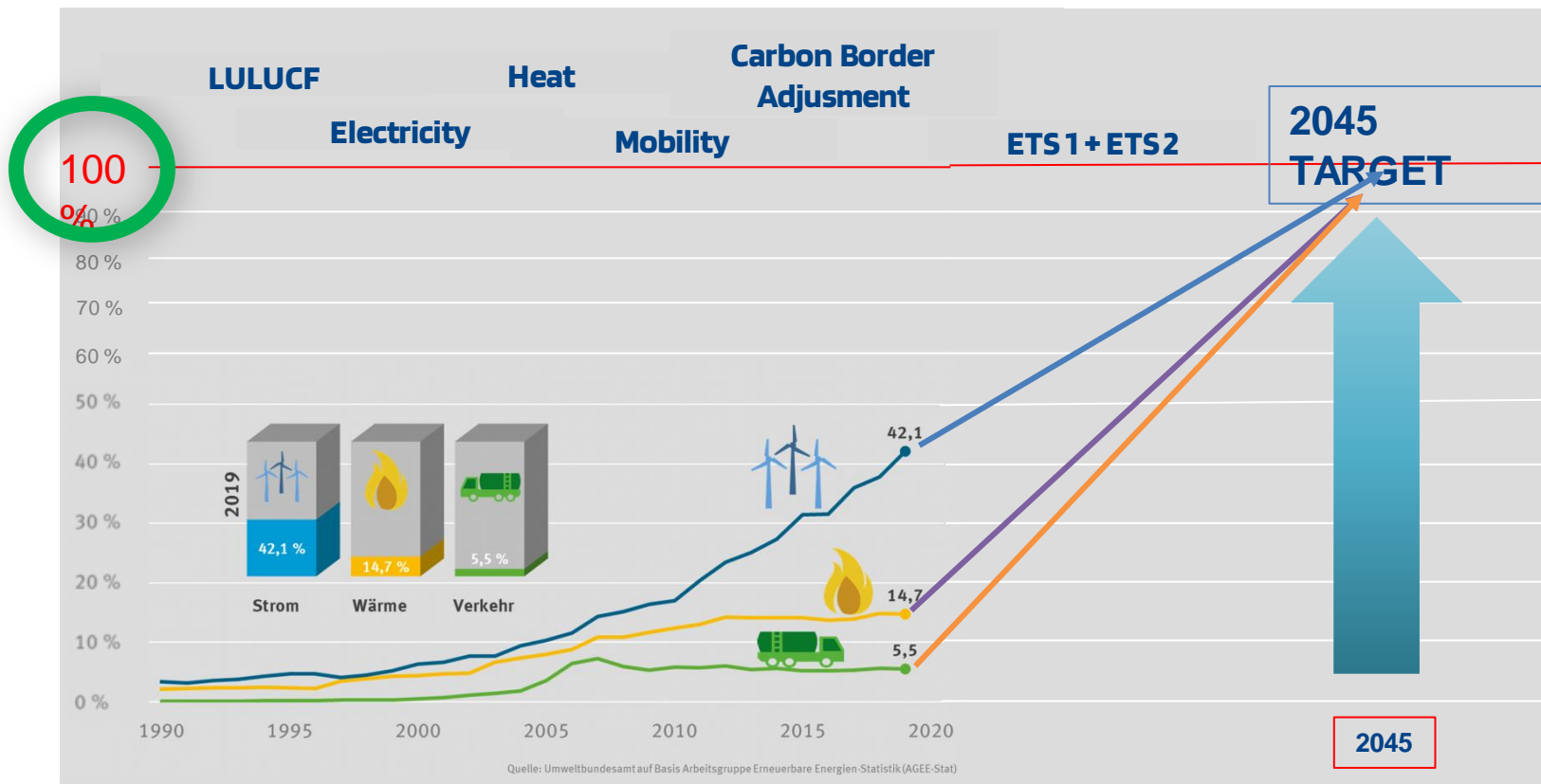


Energy Storage System
Association

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EU: Climate Neutrality by 2045

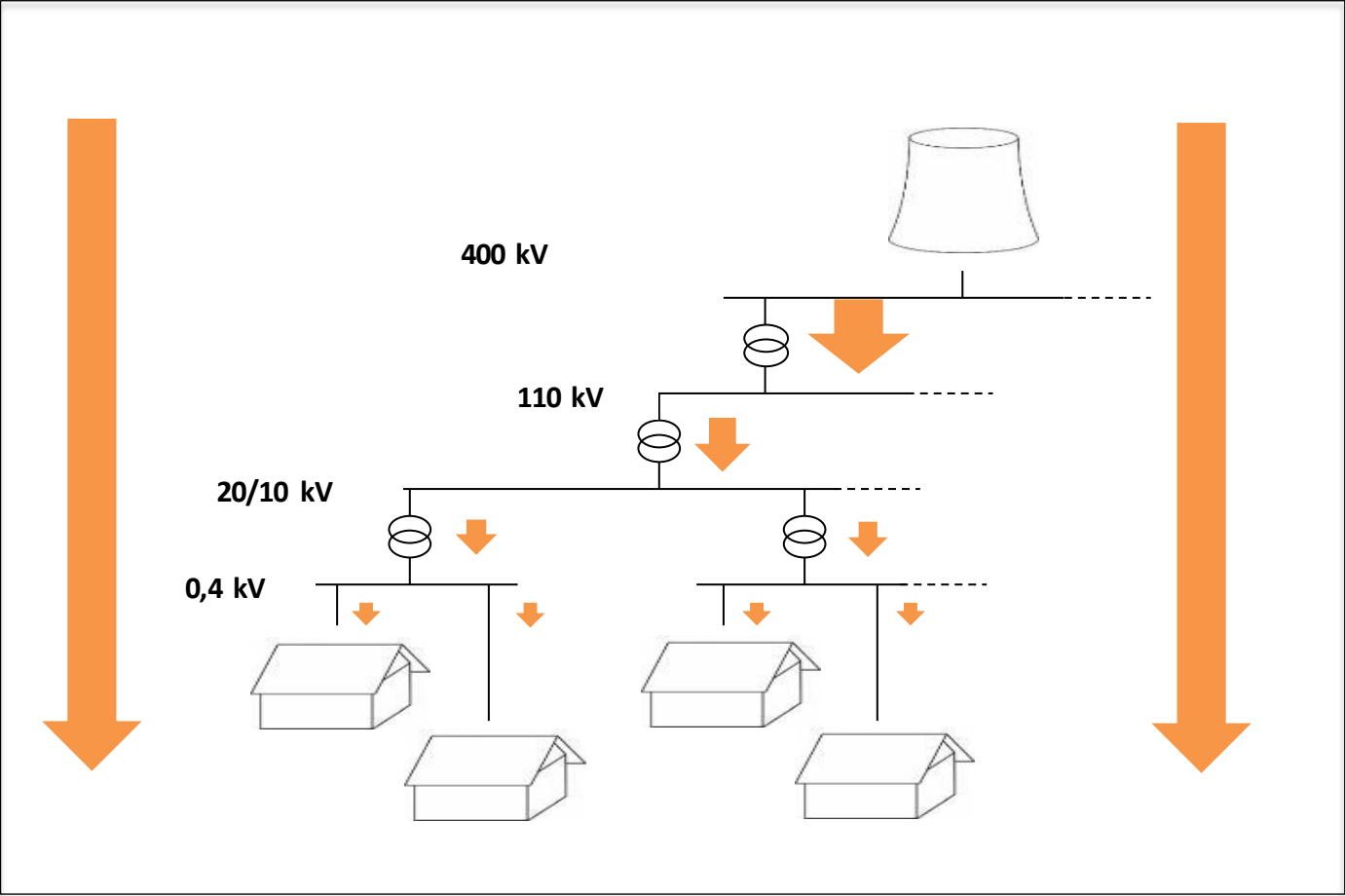


What is energy storage?

“Energy storage absorbs and then releases power so it can be generated at one time and used at another”

McKinsey (2016) on energy storage

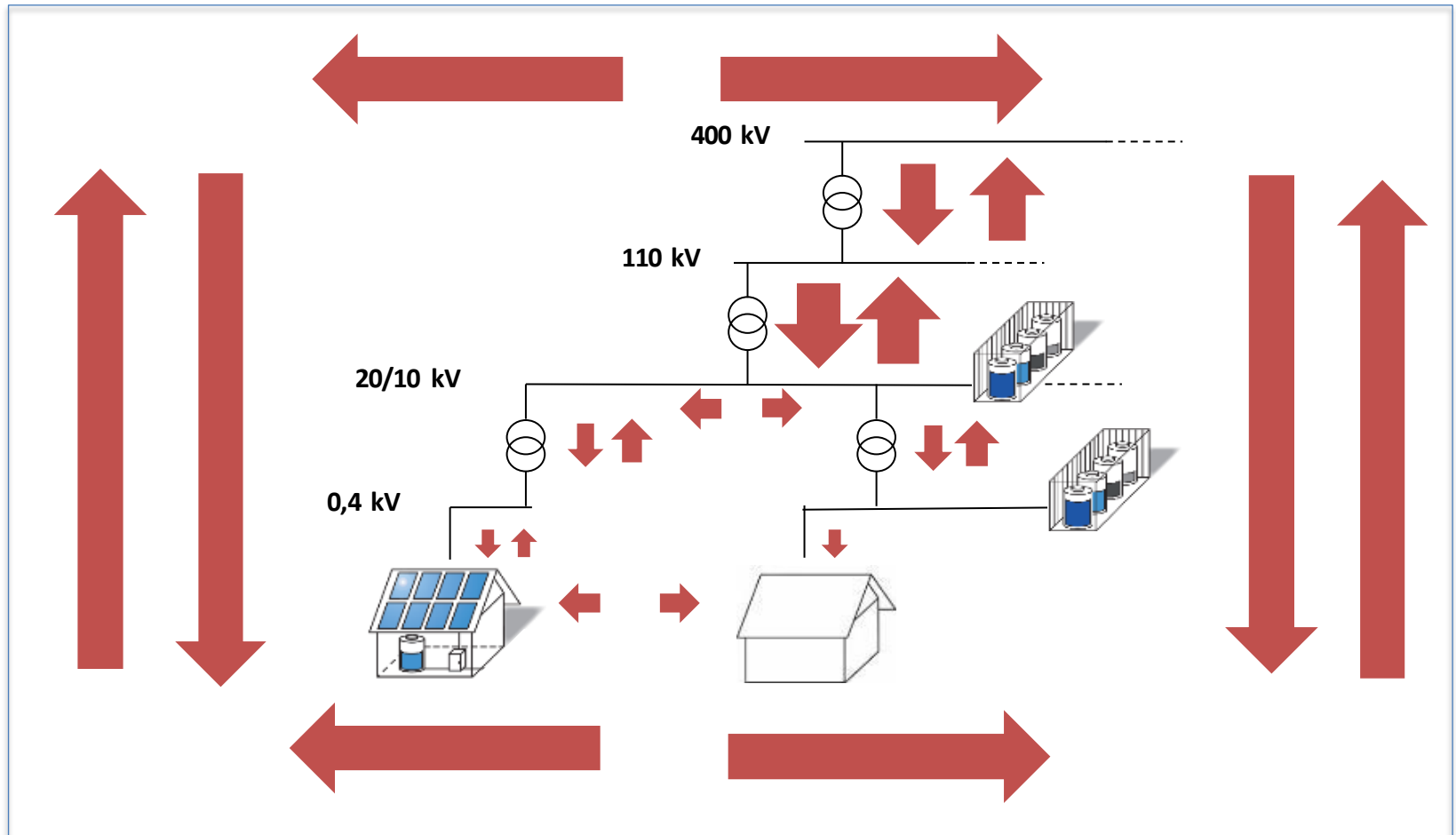
Main Challenge: Energy supply system is changing: the fossil age is coming to an end



Source: Alexander Zeh, Simon Müller, Marcus Müller (2016)

Main Challenge:

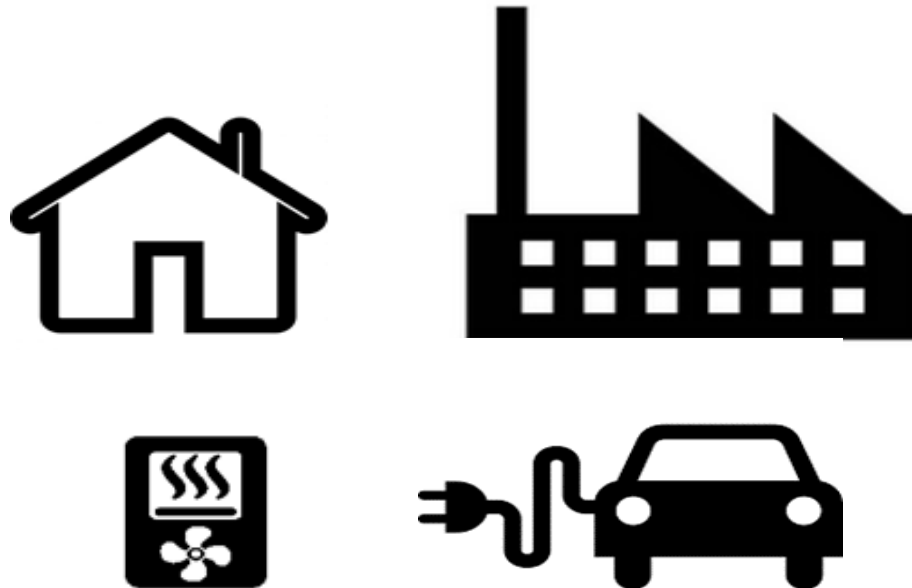
Energy supply system is changing. The new electrification age:
Energy is flowing in **multiple directions**



Main Challenges:

Why electric power becomes decisive in the electrification age?

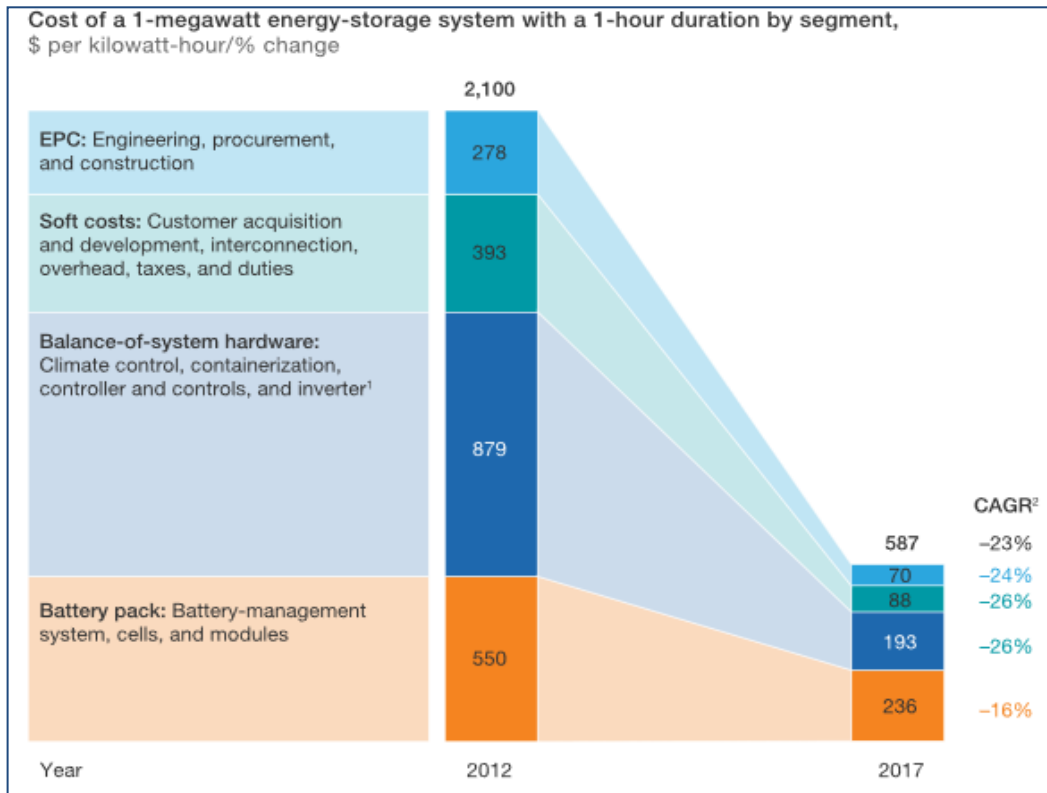
Power is energy which is used in future in all areas of our daily life



Is there a future for the electricity grid?

- Thomas Edison invented the electricity grid (1880)
- He has forgotten to invent how energy could be stored
- The energy grids of the future will be defined by renewables, energy storage systems and decentralisation

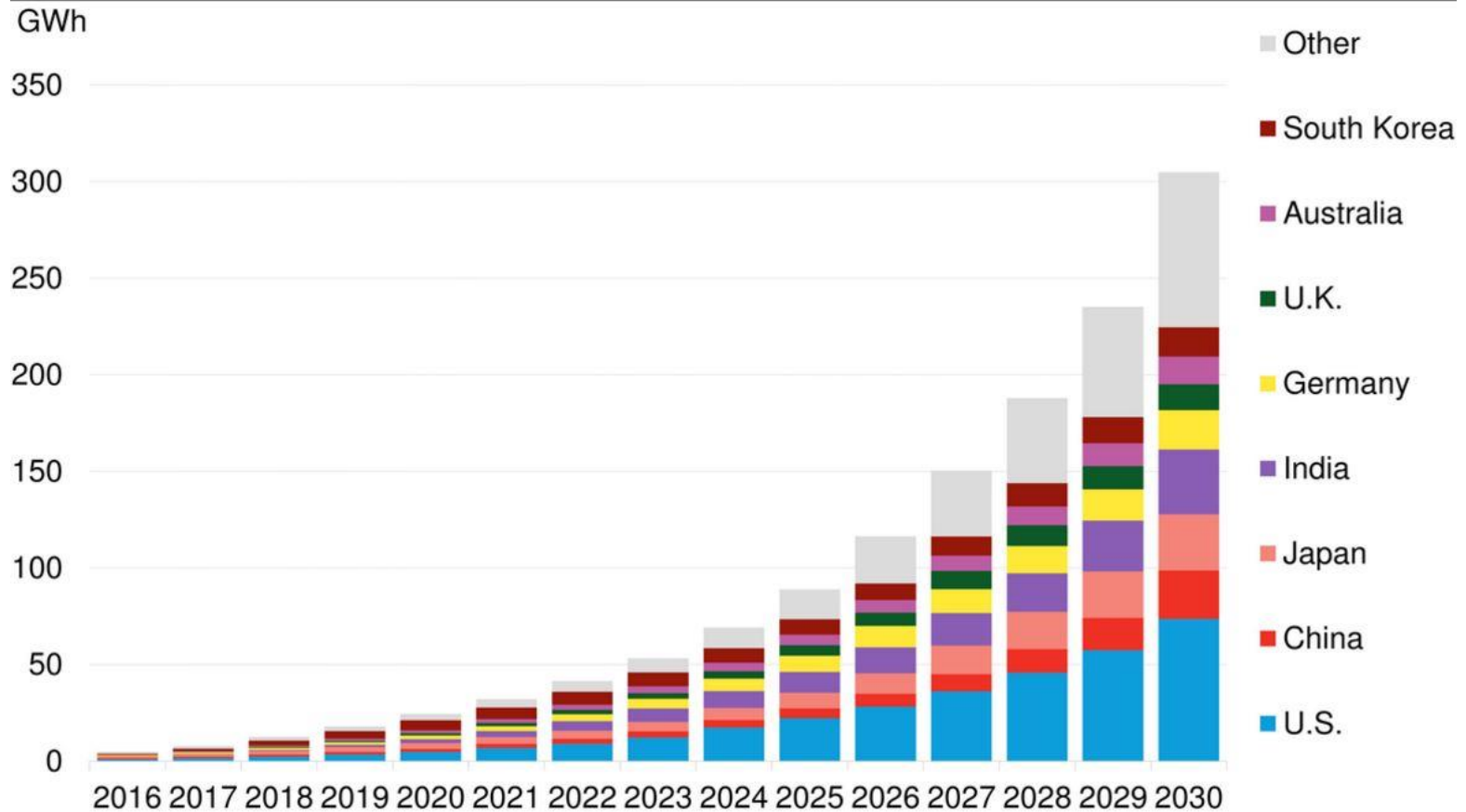
Energy storage costs are significantly declining



Rule:
Conclusions drawn based on averages do not have the precision needed to identify which customers would be profitable to serve.

McKinsey & Company 2018

Energy storage investment is going to increase globally



Bloomberg NEF: 2017

Storage is an ideal tool...

- Peak load smoothing
- Black-Start capability
- Inertia reserve
- Voltage control
- Back up energy
- Optimisation of self-consumption
- Returning market principles to the energy policy
- Positive/negative control energy
- Reactive power compensation
- Off-grid supply
- Security of supply
- Shifting excess energy to other sectors



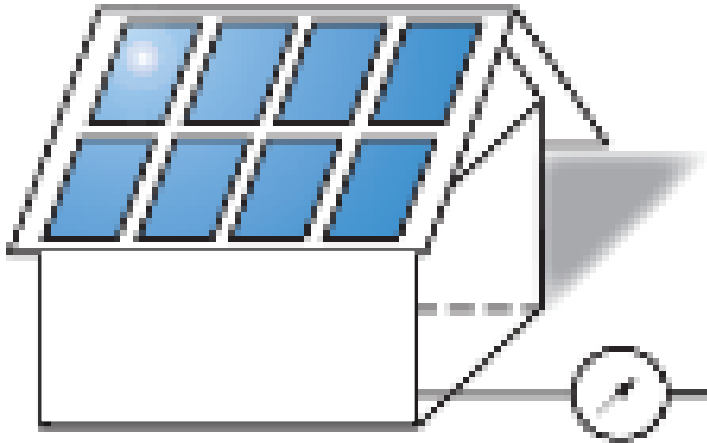
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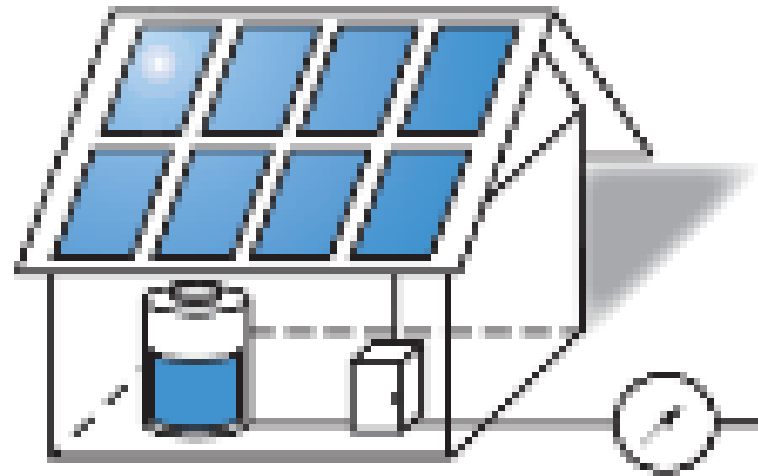
THE ENERGY SYSTEM 2030
What we **do** believe in

**Decentralization
will revolutionize
the entire energy system.**

Energy Storage: The new trend in the Residential Energy Market

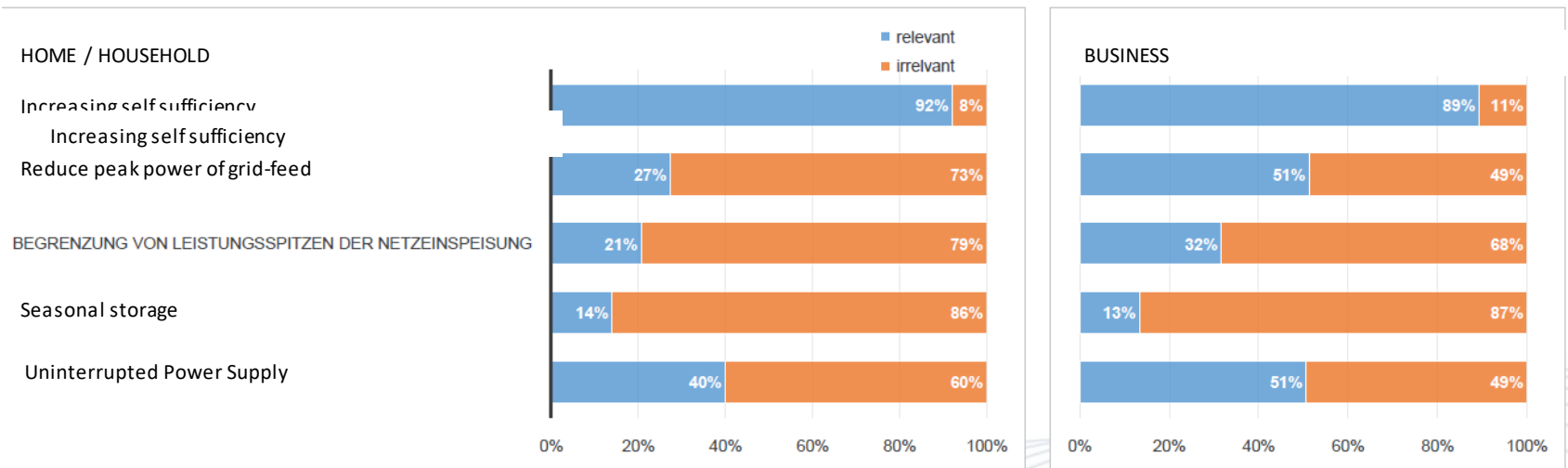


No storage:
self consumption rate: 35 %

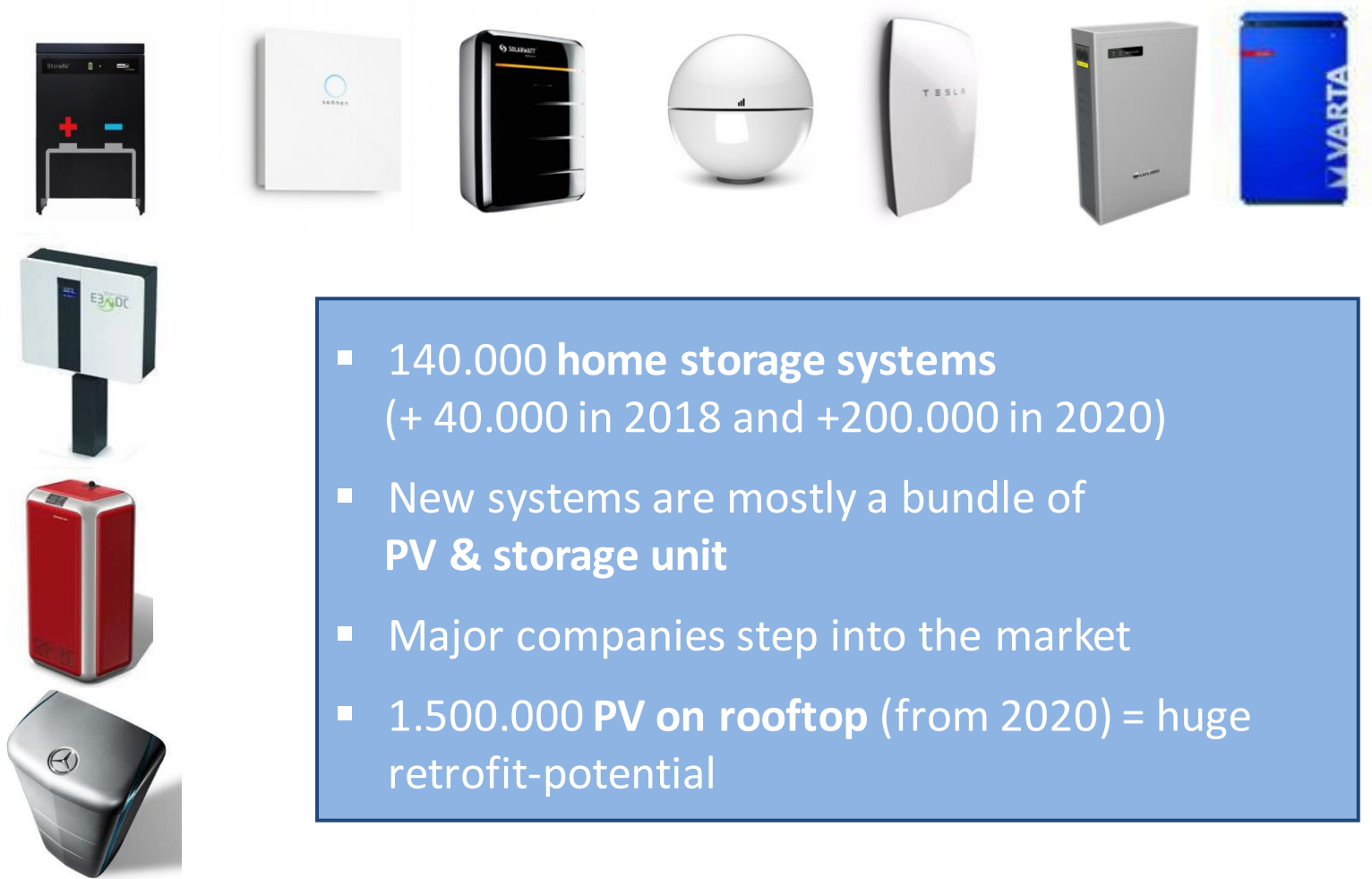


Storage:
self consumption rate: 70 %

Home Storage: Numbers



Future Trends in the Residential Storage Market



- 140.000 home storage systems (+ 40.000 in 2018 and +200.000 in 2020)
- New systems are mostly a bundle of PV & storage unit
- Major companies step into the market
- 1.500.000 PV on rooftop (from 2020) = huge retrofit-potential

What are the future trends in the Industrial Storage Market?

- **Future:** More than 1.000 projects in Germany (agriculture, industry, trade)
- **Demand:** Uninterrupted Power Systems (UPS), Backup Power & Peak-load management
- **Megatrend:** Combination of PV, Storage and E-mobility at home (fast charging)

3 existing and fast growing markets for storage technologies...



Current developments:

1. New technologies
2. Storage is a gamechanger
3. Multi-use models

Combination of technologies and cross-sectoral integration: housing + mobility

Combination of technologies:

- PV
- battery storage
- heat pump
- electrical storage heating
- Evs

electricity for heating + cooling

Digital energy management is the new key:

90% of newly installed home storage batteries
including heat pumps:



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Regulatory Framework: EU

- fees and taxes to be applied fairly, avoiding double costs for energy storage
- Clear definition of storage as part of the energy system in its **own right** – beside
 - generation
 - transport
 - Consumption

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