

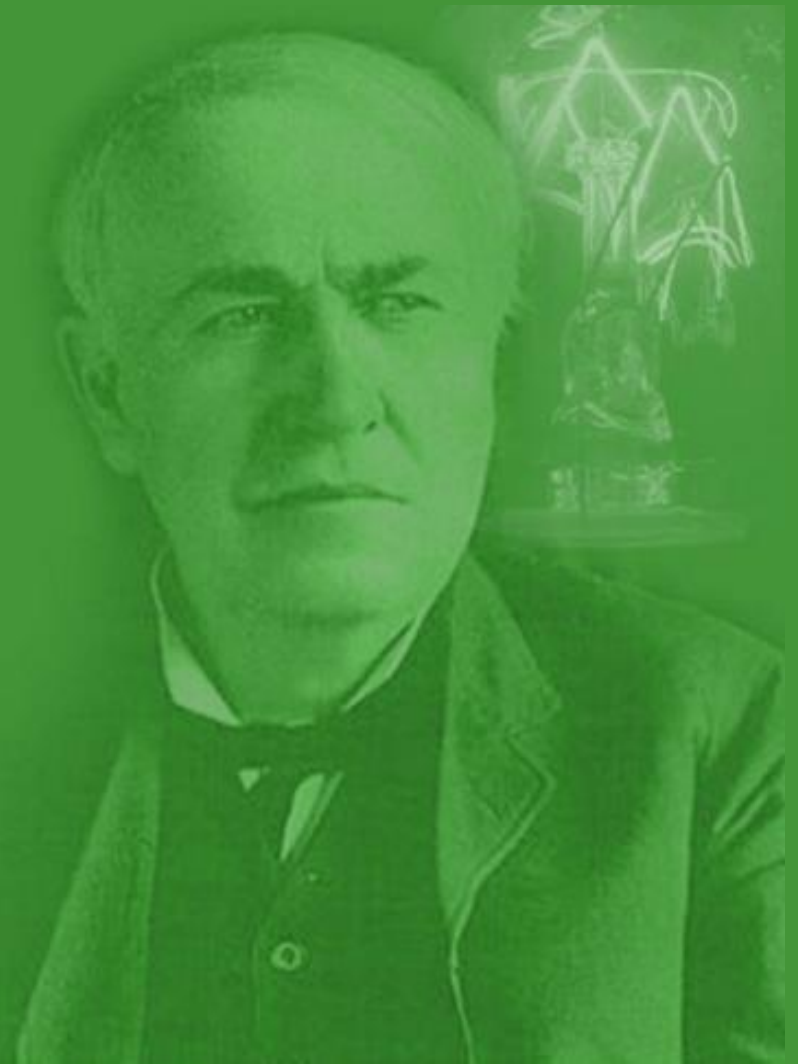
The market for storage and V2G services

2nd V2G Conference SEEV4-City – Amsterdam, May 11th 2017



“We will make
electricity so cheap that
only the rich will burn
candles....”

Thomas Edison



„We will make electric cars
so cheap that only the rich
drive gasoline cars ...“

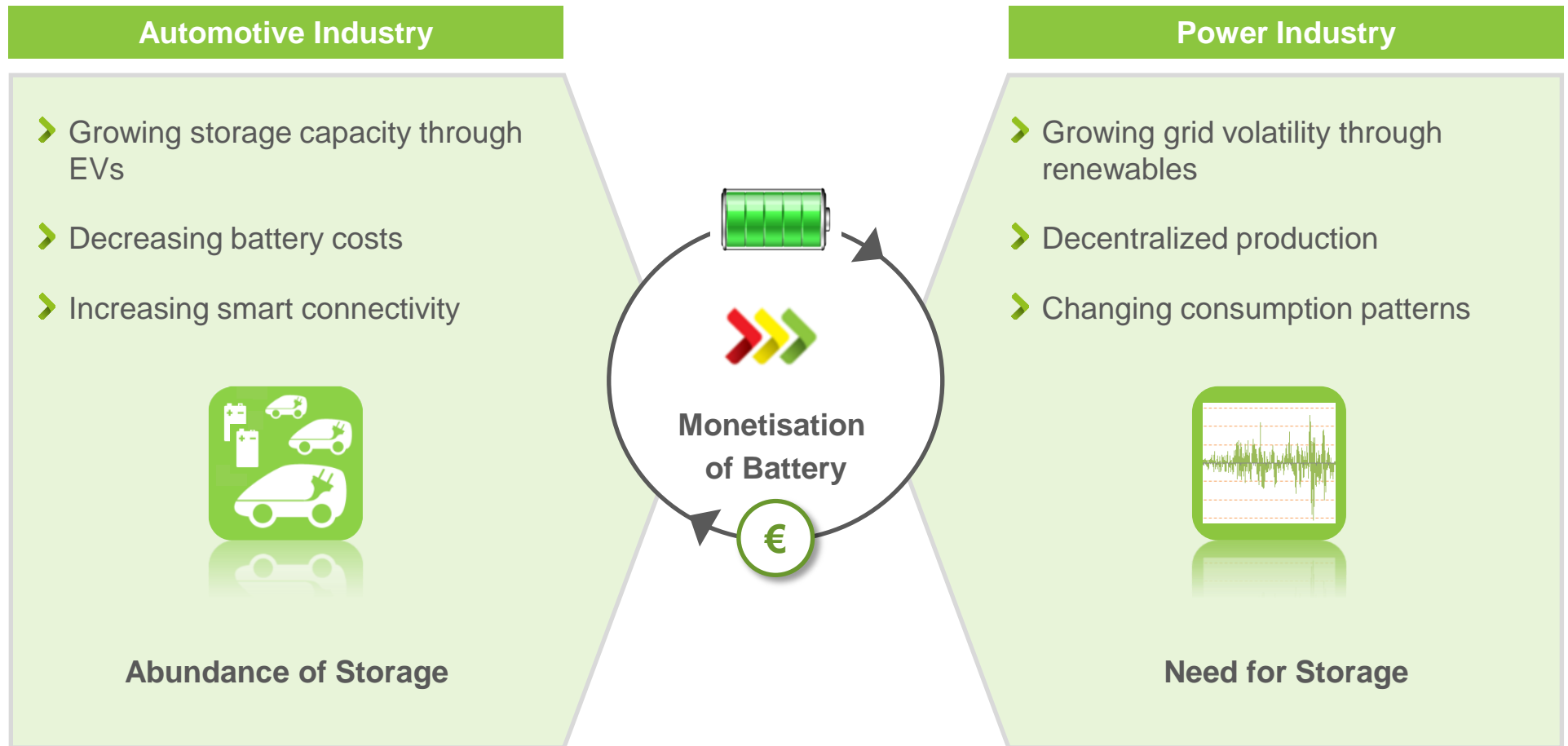
Thomas Raffeiner,
Founder and CEO of The Mobility House



The disruptive forces of two industries benefit each other



Business Disruption



The Mobility House provides charging solutions since 2009 for Europe and beyond



Company Overview

- Founded:** 2009
- Locations:**
- Munich (HQ), DE
 - Zurich, CH
 - San Francisco, USA
- Clients:**
- Car manufacturer
 - Fleet customers
 - Retail customers
- Products & Services:**
- Charging solutions
 - Stationary 2nd life vehicle batteries
 - Vehicle-to-Grid (V2G)
- Staff members:** ~50



TMH has gained charging experience with more than 10 car manufacturers in over 10 markets



The Mobility House in Figures

13.000+

sold/
installed products

10+

car manufacturers as client

10+

countries

4.000+

car dealers supported by TMH

10+

installation partners
under contract

30+ MWh

stationary (2nd-use) batteries
in operation/under construction

1+ Fleet

for
controlled charging

1,5+ Years

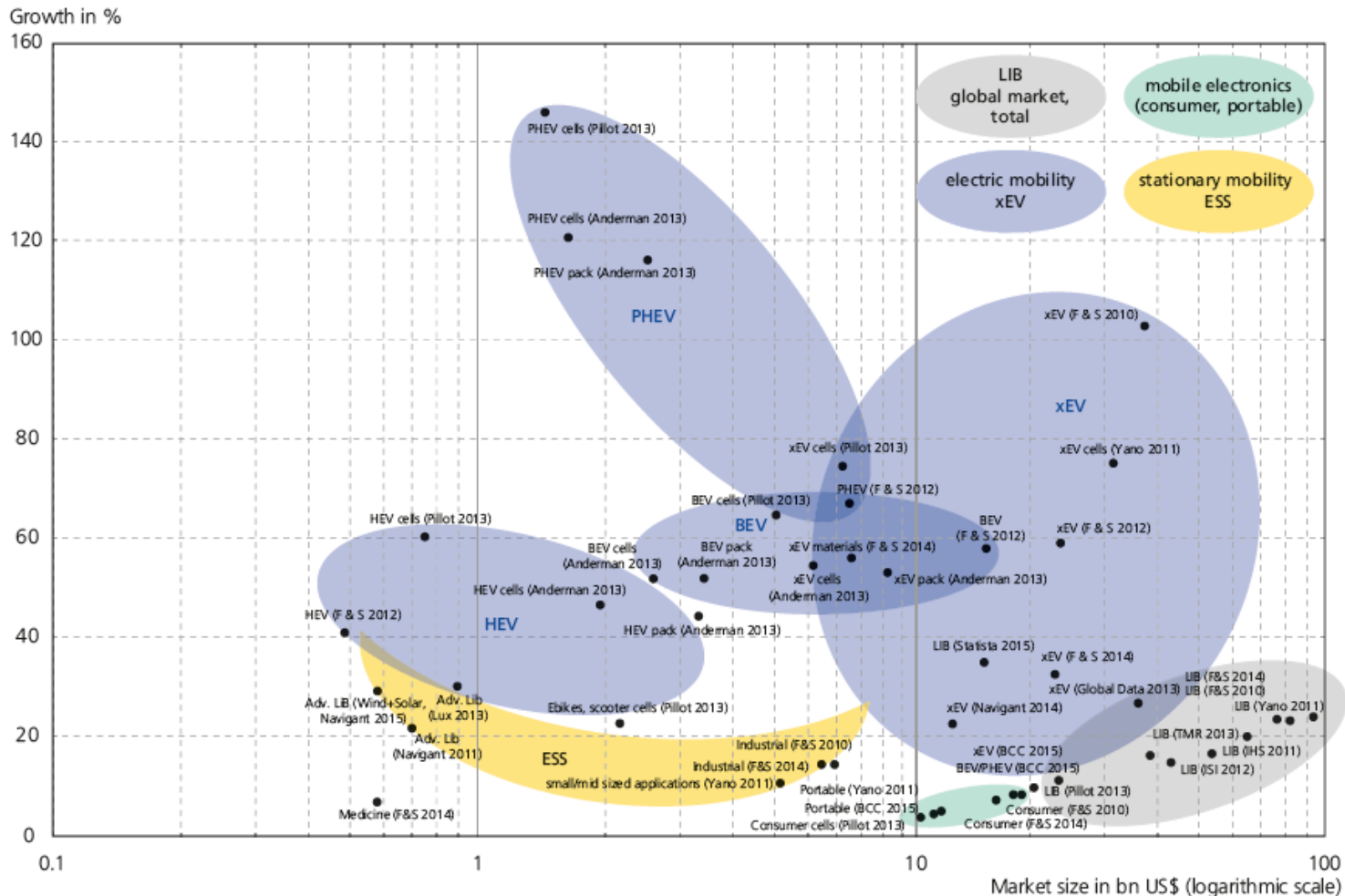
bidirectional V2G pilot
(PRL) in Germany



Electric vehicle batteries have the highest growth rates of all battery applications



Global LiB markets 2020 by segments

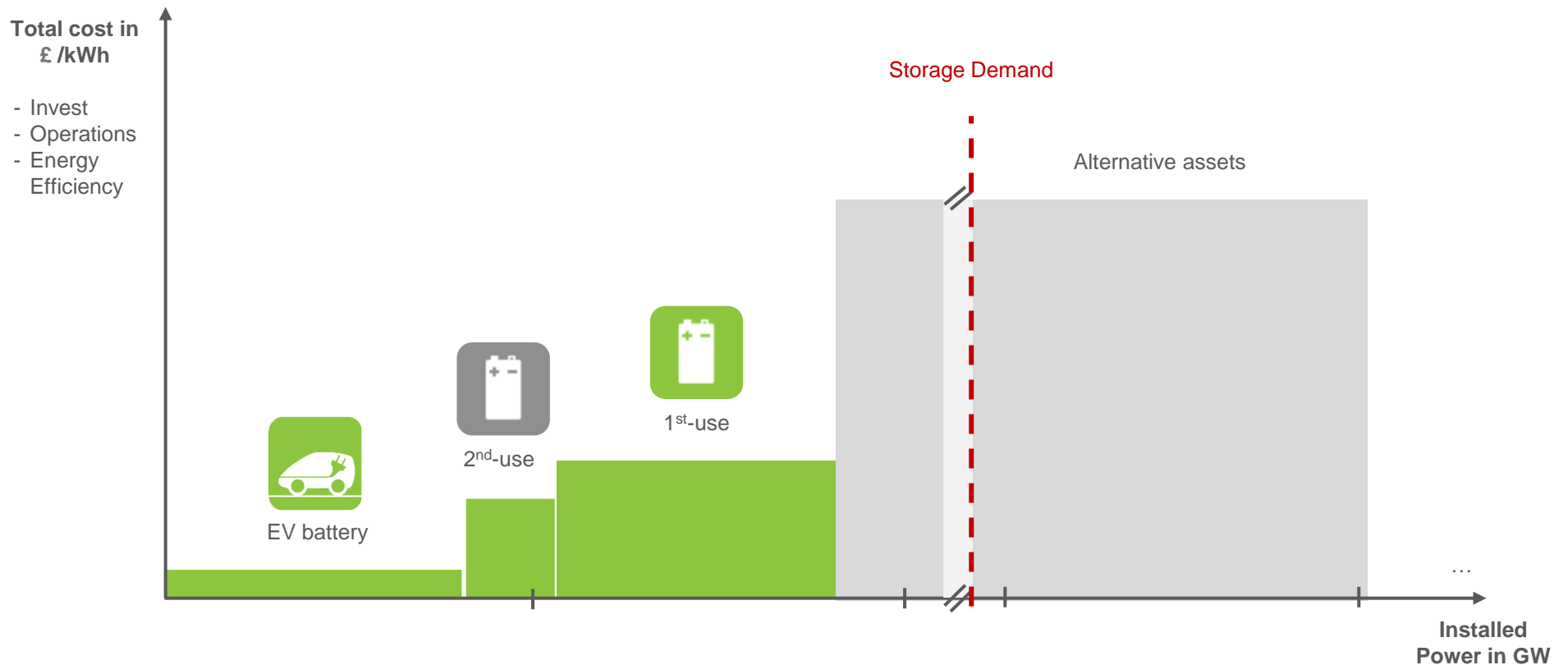


Vehicle batteries are the most competitive storage solution in the market ...



Merit Order Short-Term Storage

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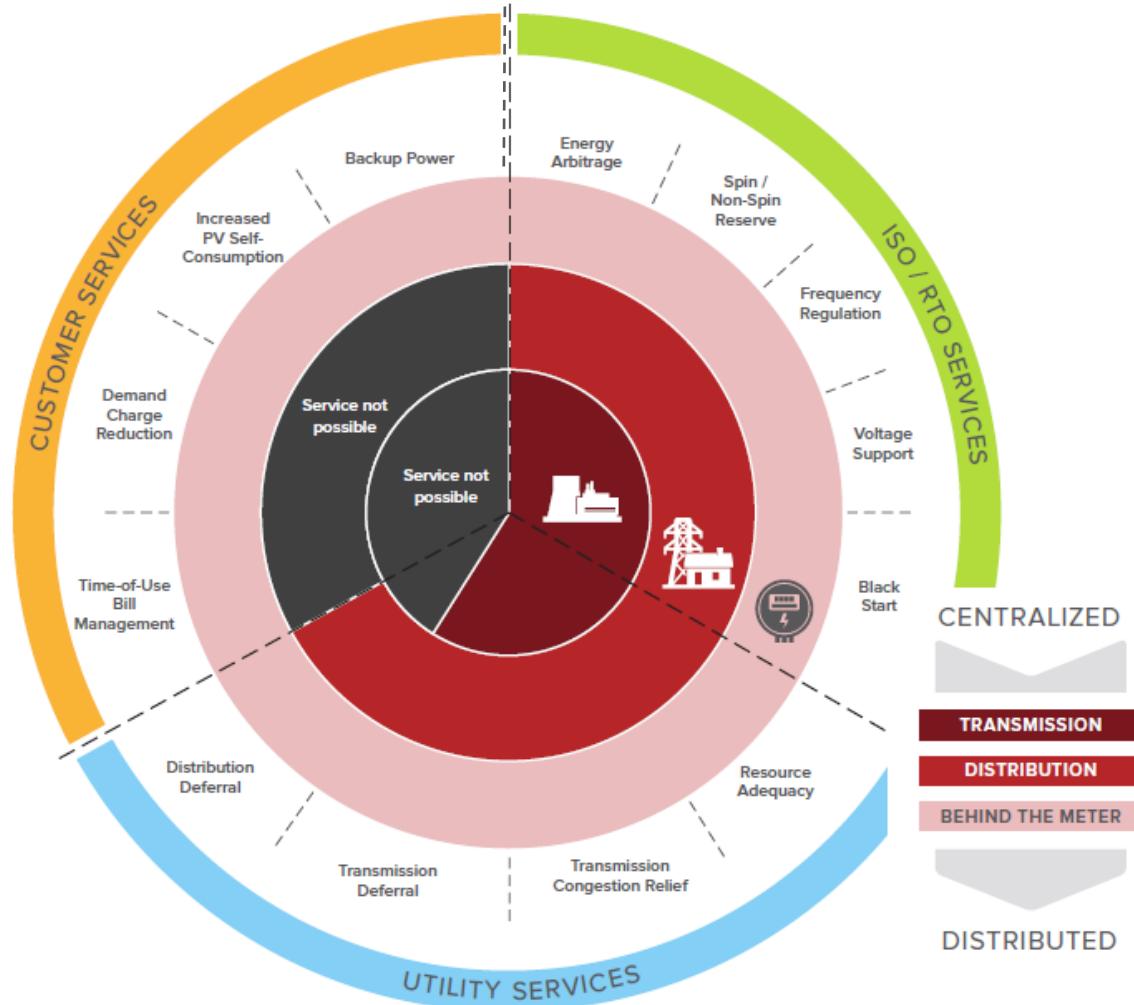


... and address various stakeholders



Stationary storage applications by stakeholder

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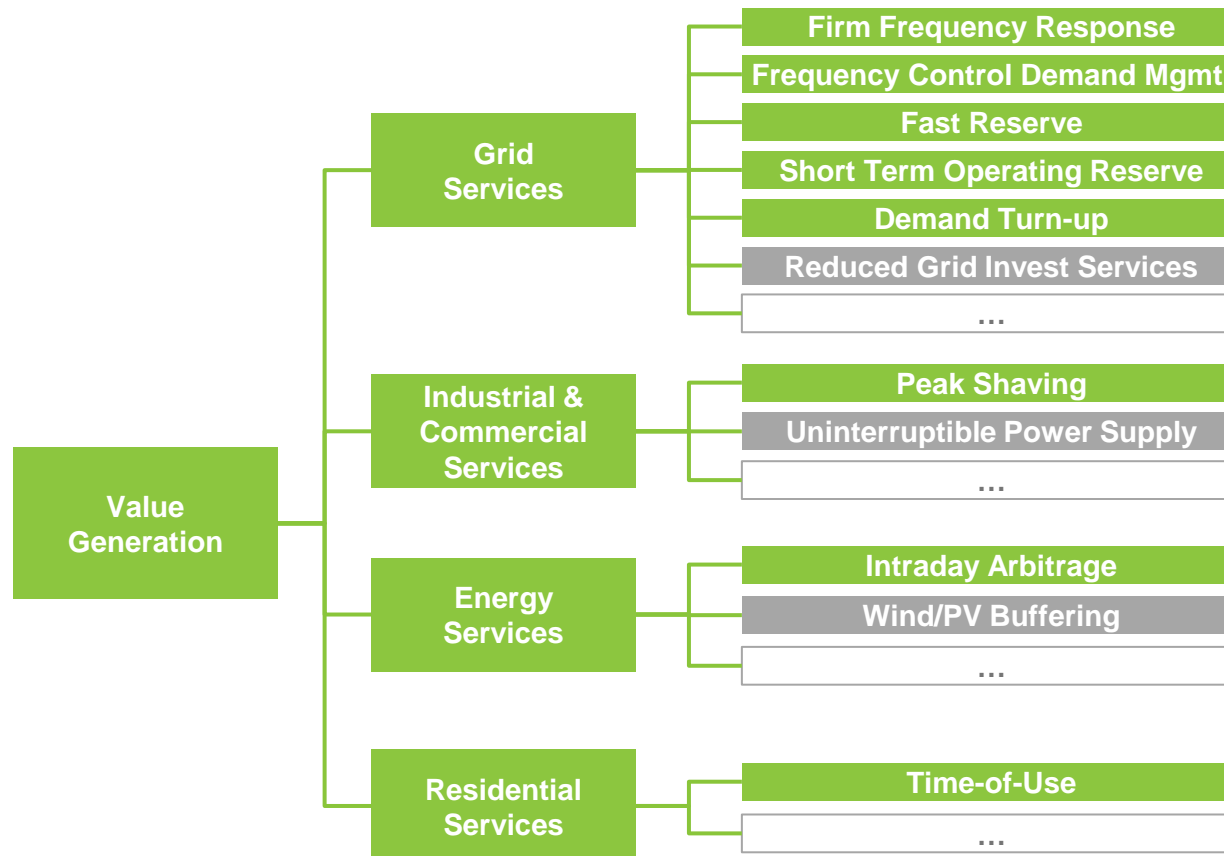


There are several existing products in the UK available to generate value with battery storages



Products applicable for V2G

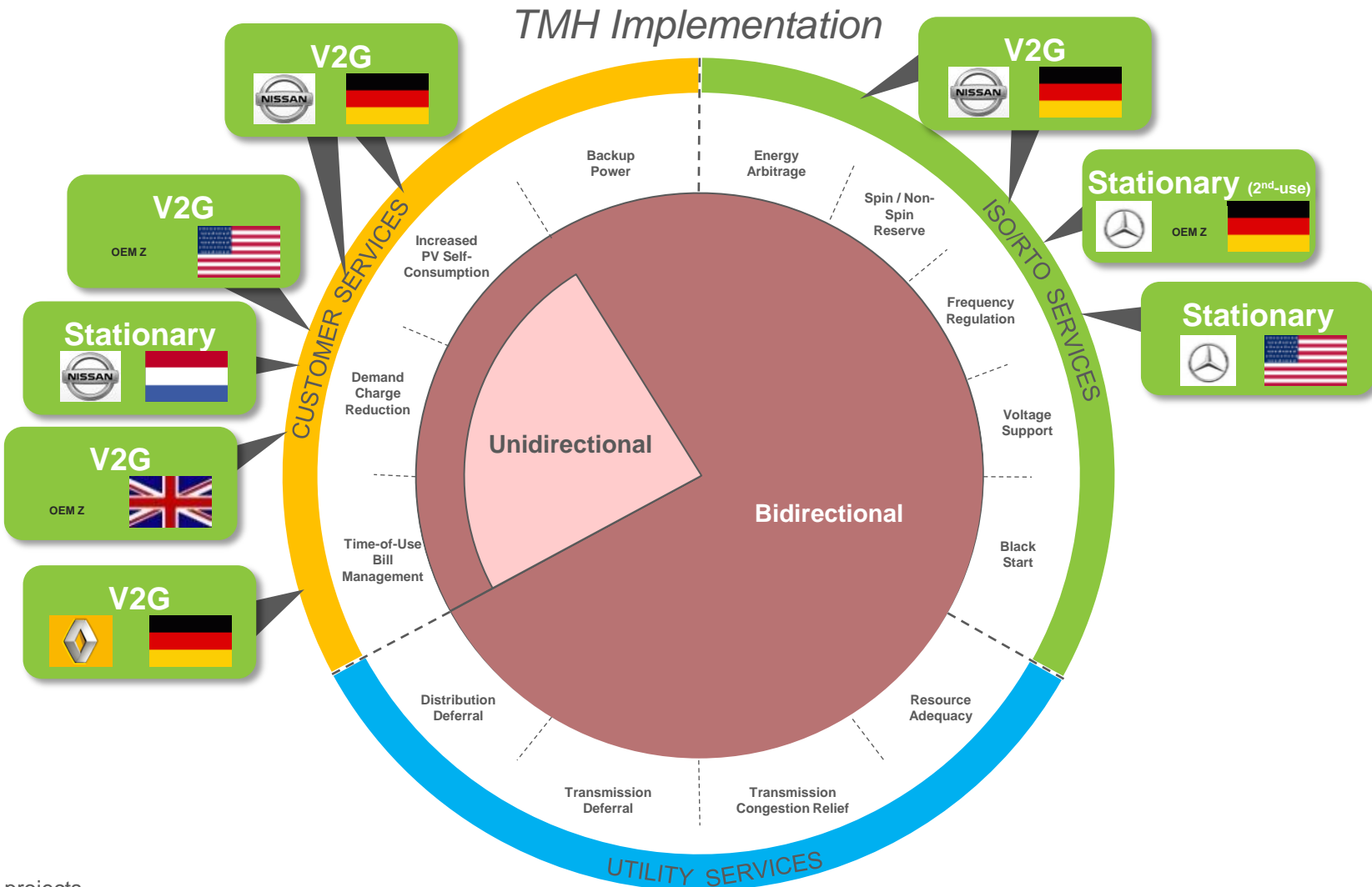
EXAMPLE UK



■ Existing V2G applications ■ Future V2G applications

Source: The Mobility House, National Grid

TMH builds a variety of battery service applications



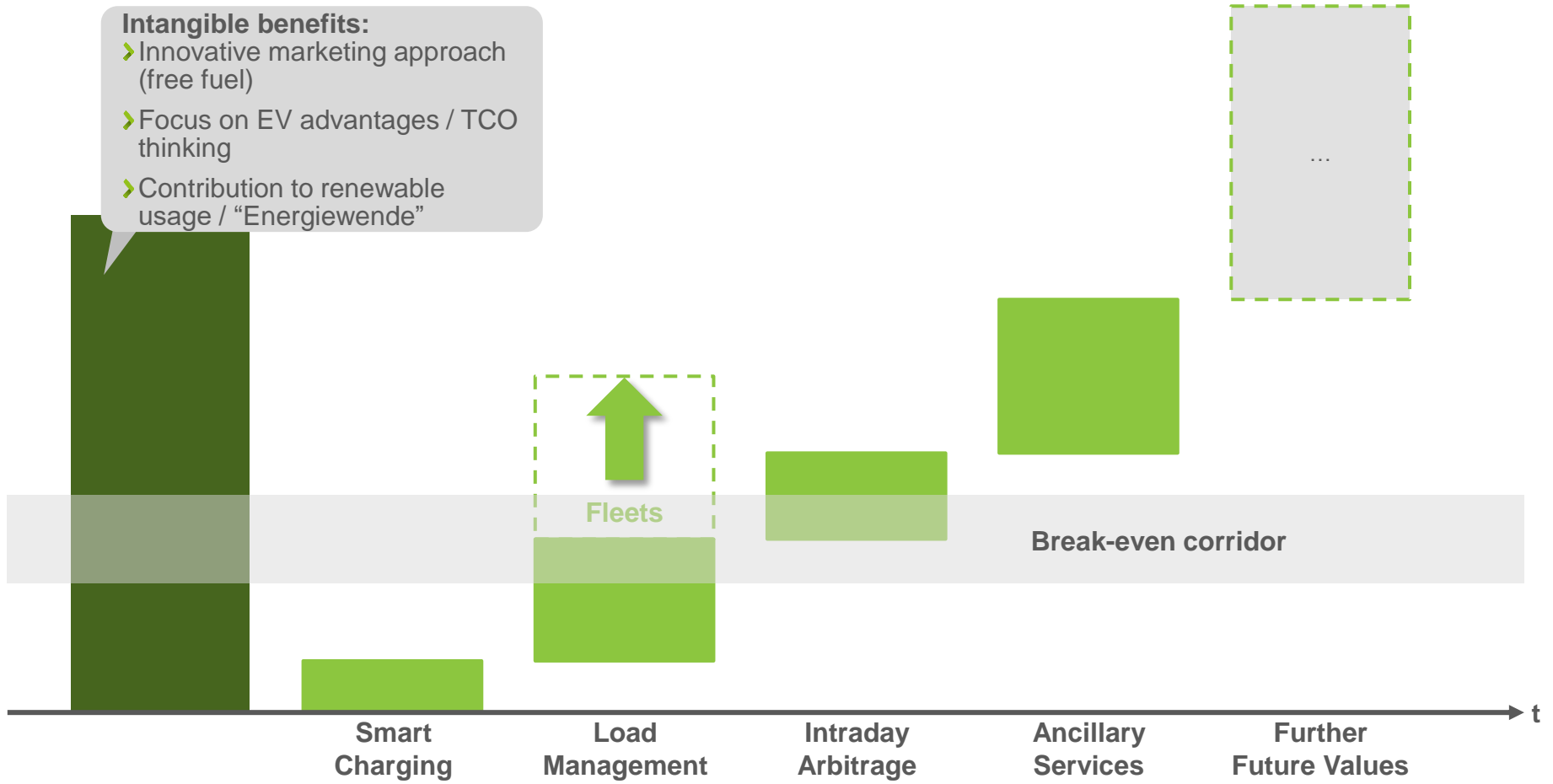
Cost of electricity can be recovered with existing technology



Revenue Potential (in €/EV/a)

Intangible benefits:

- Innovative marketing approach (free fuel)
- Focus on EV advantages / TCO thinking
- Contribution to renewable usage / "Energiewende"



Intangibles
 Existing technology
 Further options

TMH project example V2G unidirectional

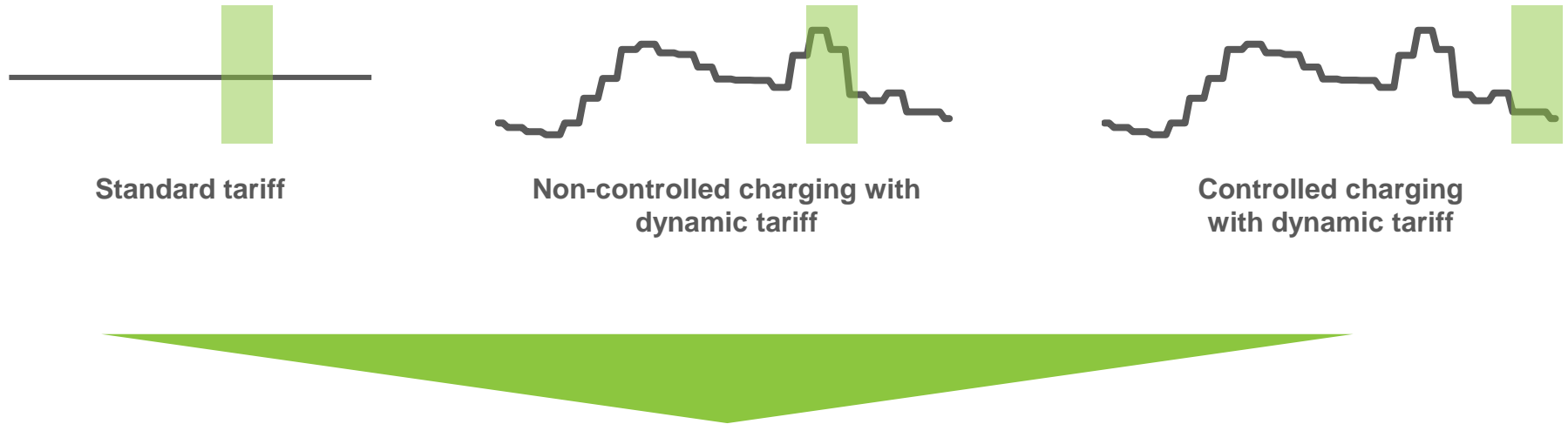


Smart sourcing enables purchase of electricity at optimized costs



Smart Sourcing Theory

- Analysis of dynamic sourcing vs. standard sourcing based on EEX prices 2013/14



- Significant savings of controlled charging with dynamic tariff (spot market) vs. standard charging depending on situation (vehicle, drive distance, ...)
- Additional revenue potential through other value generating activities

TMH project example V2G bidirectional





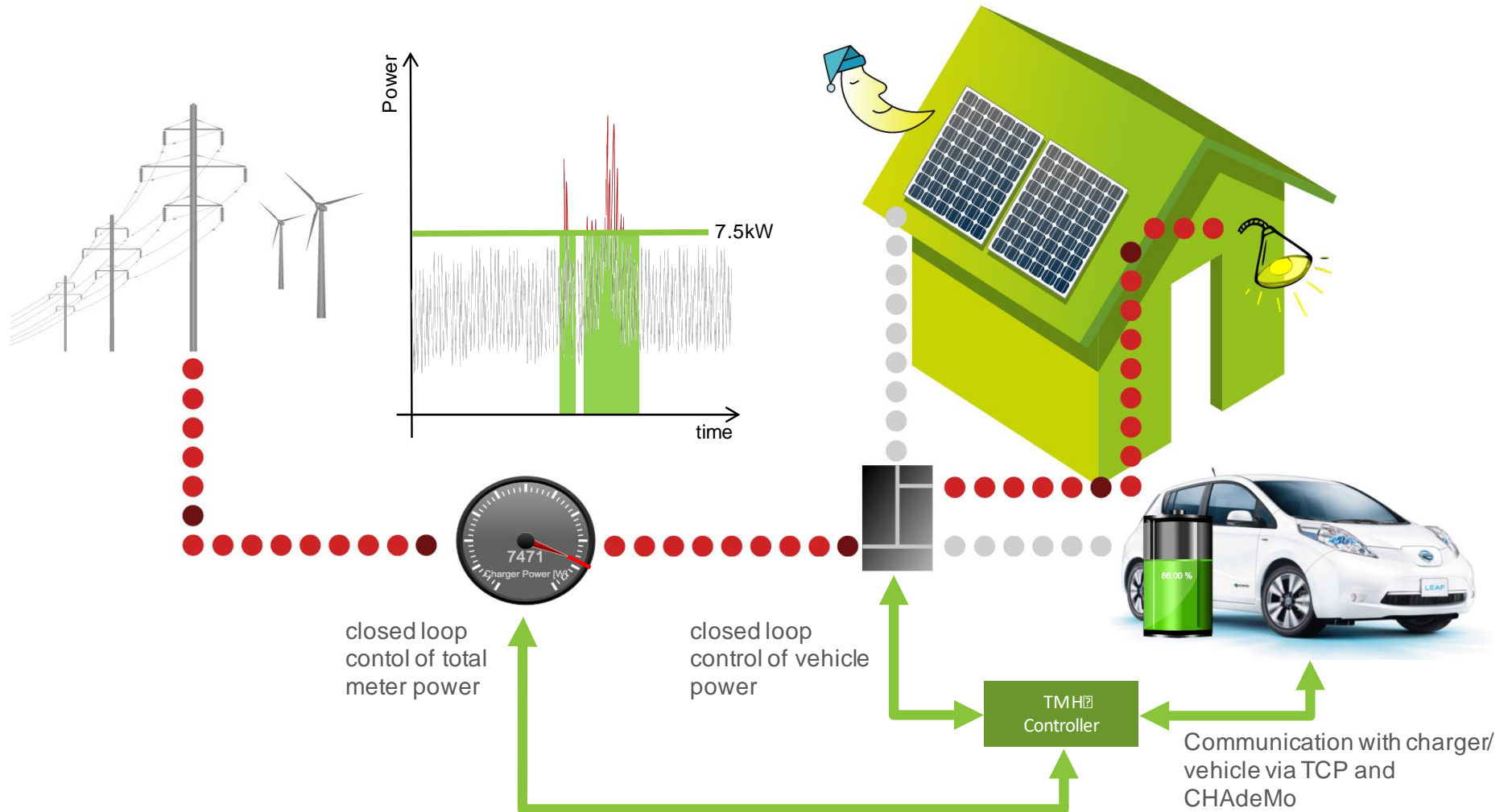
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STROM REIN.  STROM RAUS.
#NISSAN BIDIREKTIONALES LADEN

V2G solution reduces power peaks, realizes solar integration and does reserve services

V2G project with Nissan

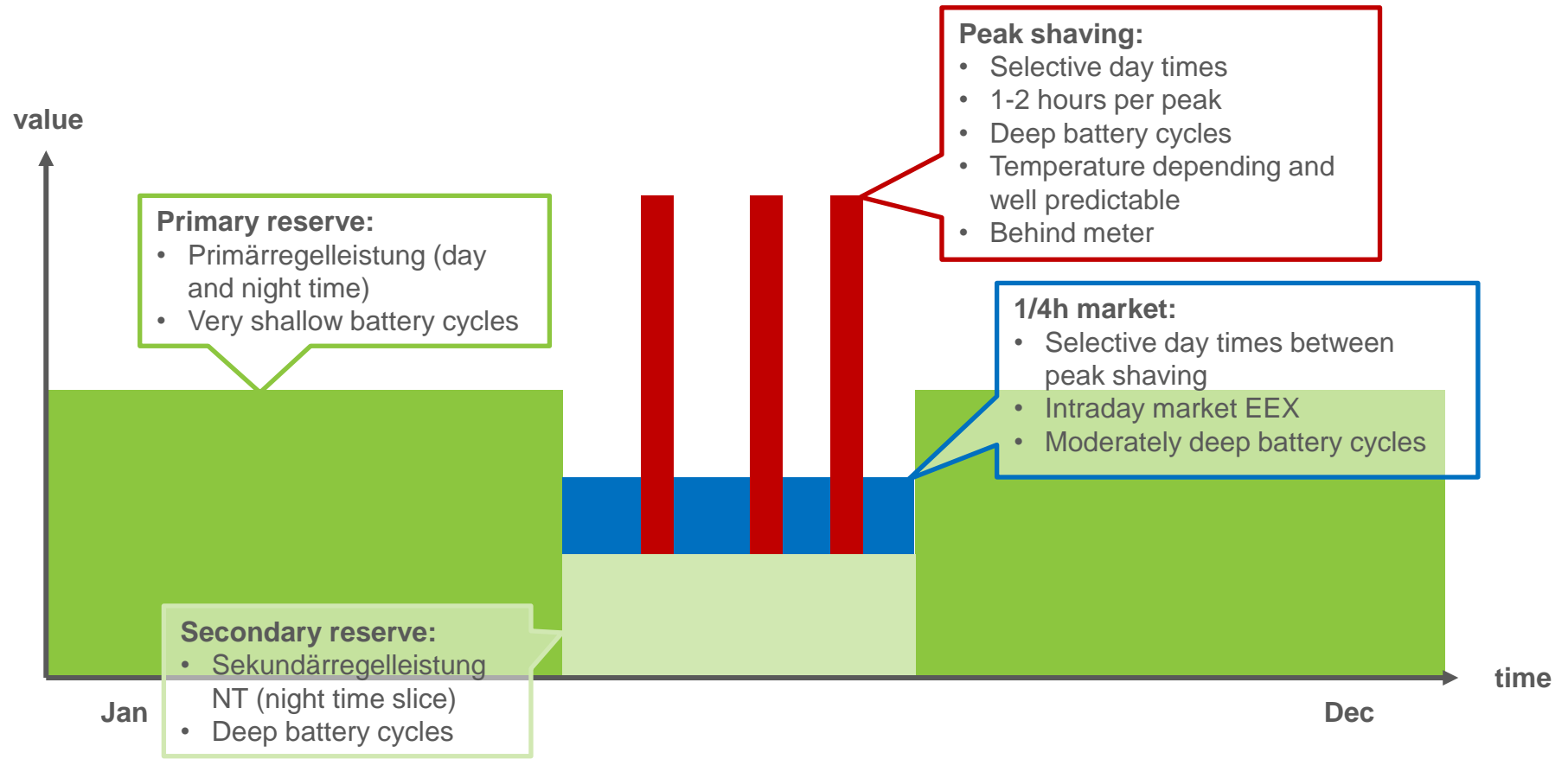


Smart product stacking is a key success factor



Overview of operating modes

SCHMATIC



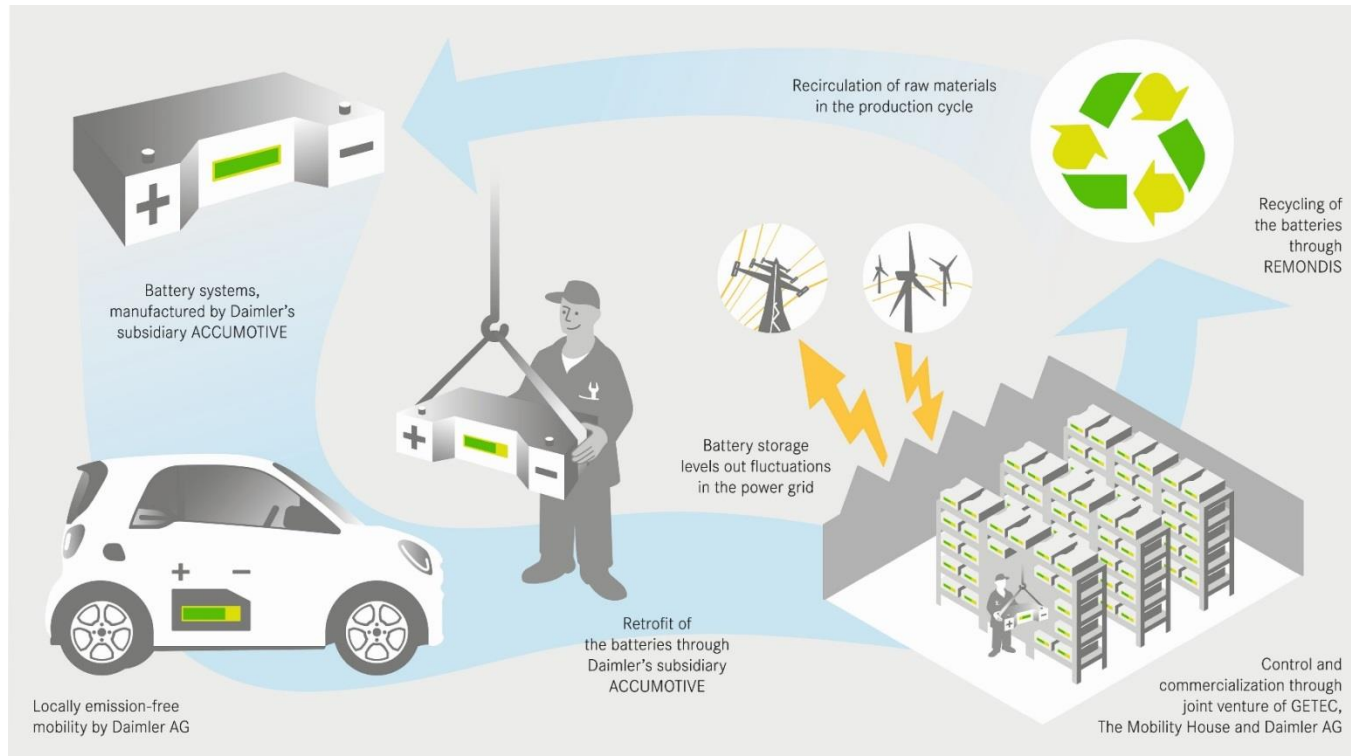
TMH project example 2nd use grid scale battery storage



How is the process?



Battery lifecycle



DAIMLER


THE MOBILITY HOUSE

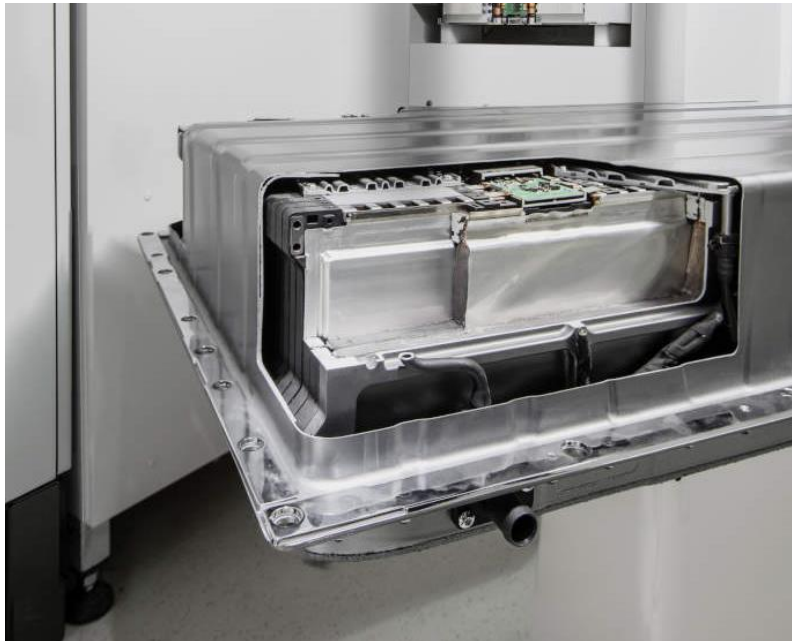
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REMONDIS[®]
IM AUFTRAG DER ZUKUNFT

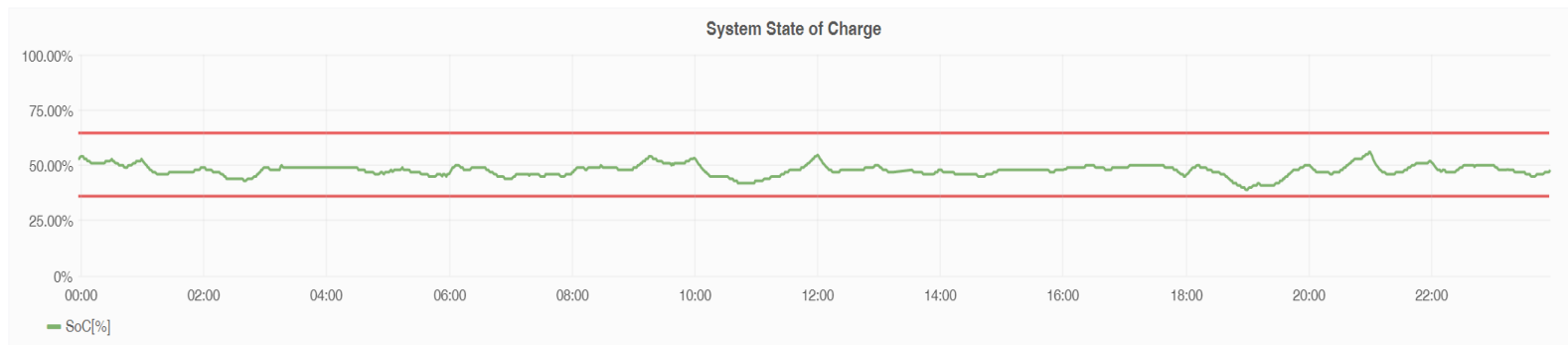
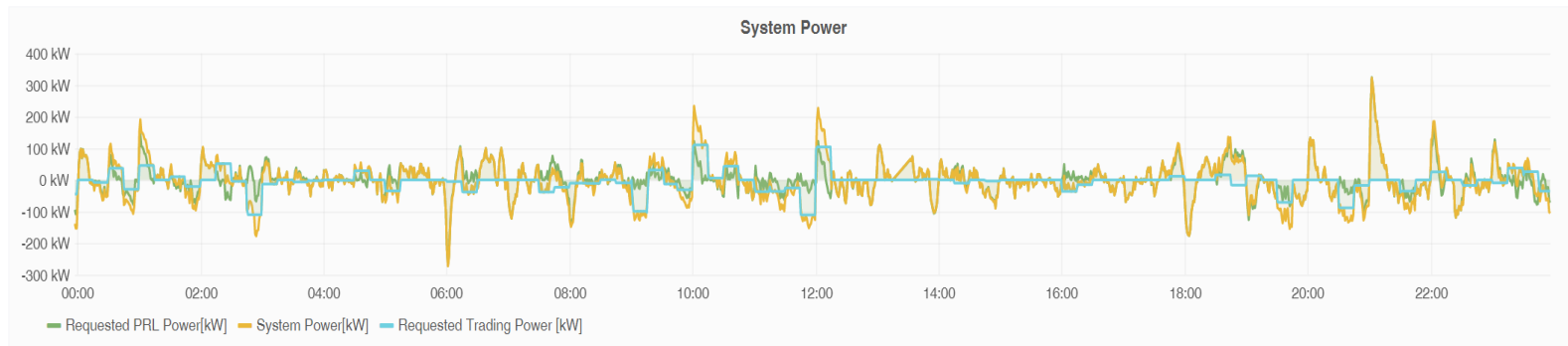
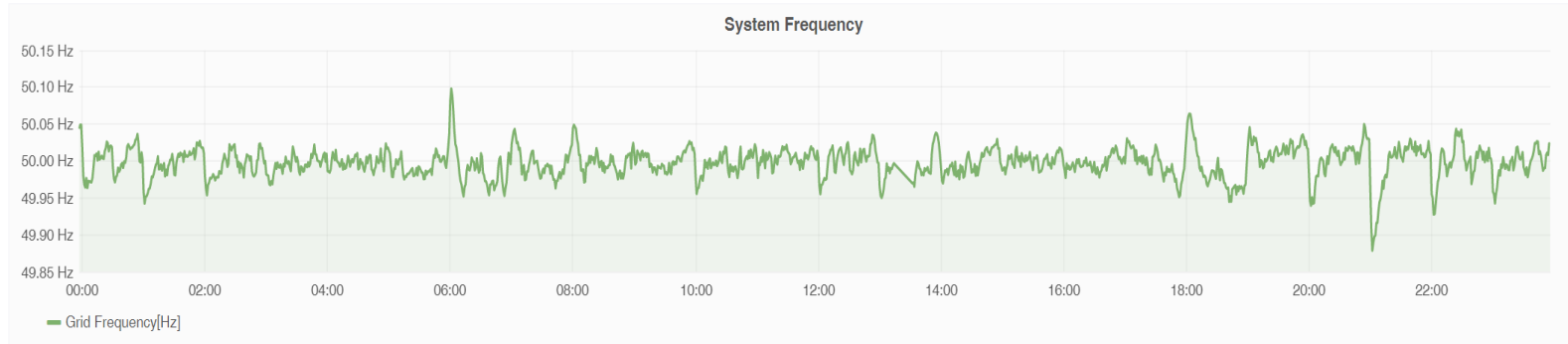
2nd-use storage



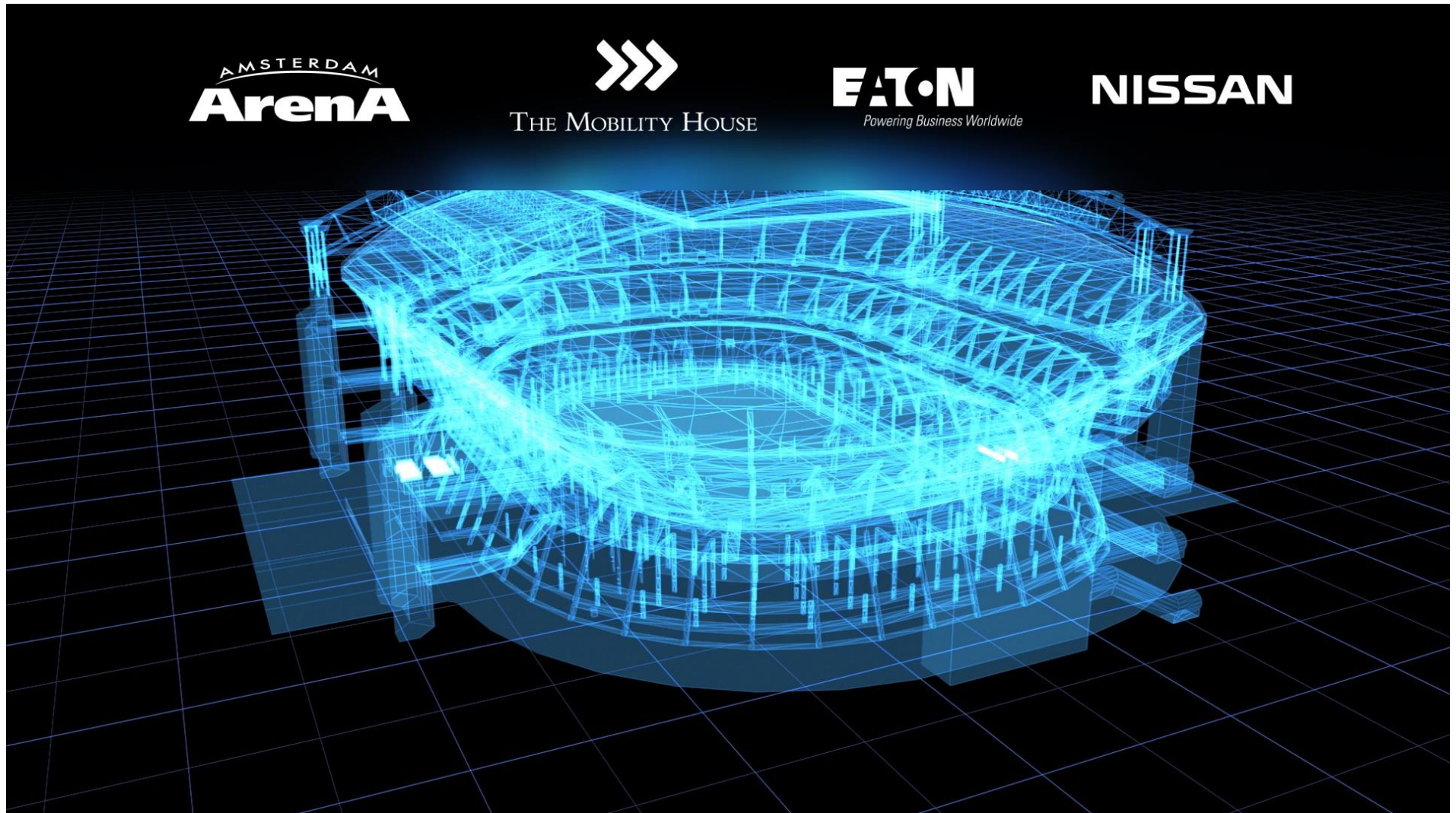
2nd-use storage



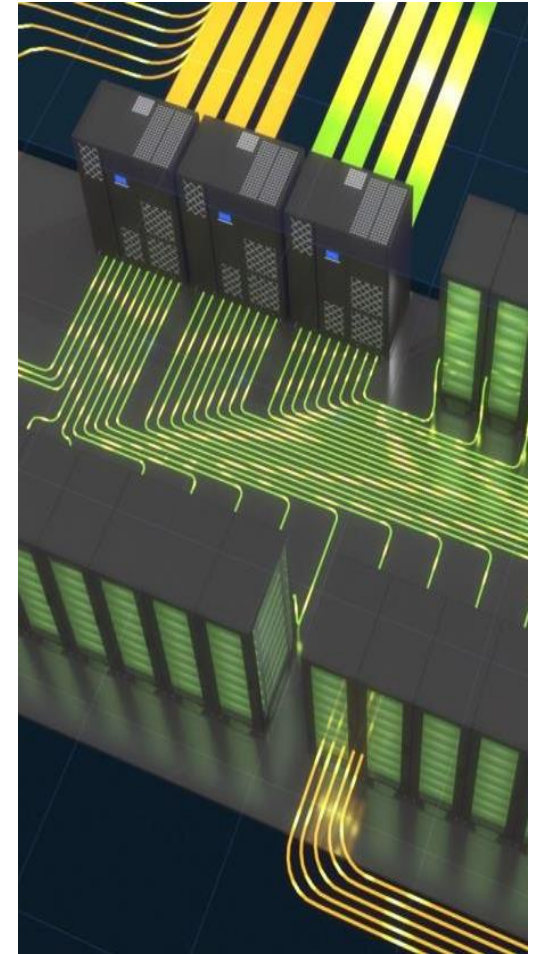
Primary reserve service profile



First 2nd use multipurpose storage in a stadium



Providing several stacked energy products





Thanks for your attention!

Questions?

THE MOBILITY HOUSE 
Marcus Fendt, Managing Director