

THE MOBILITY HOUSE 

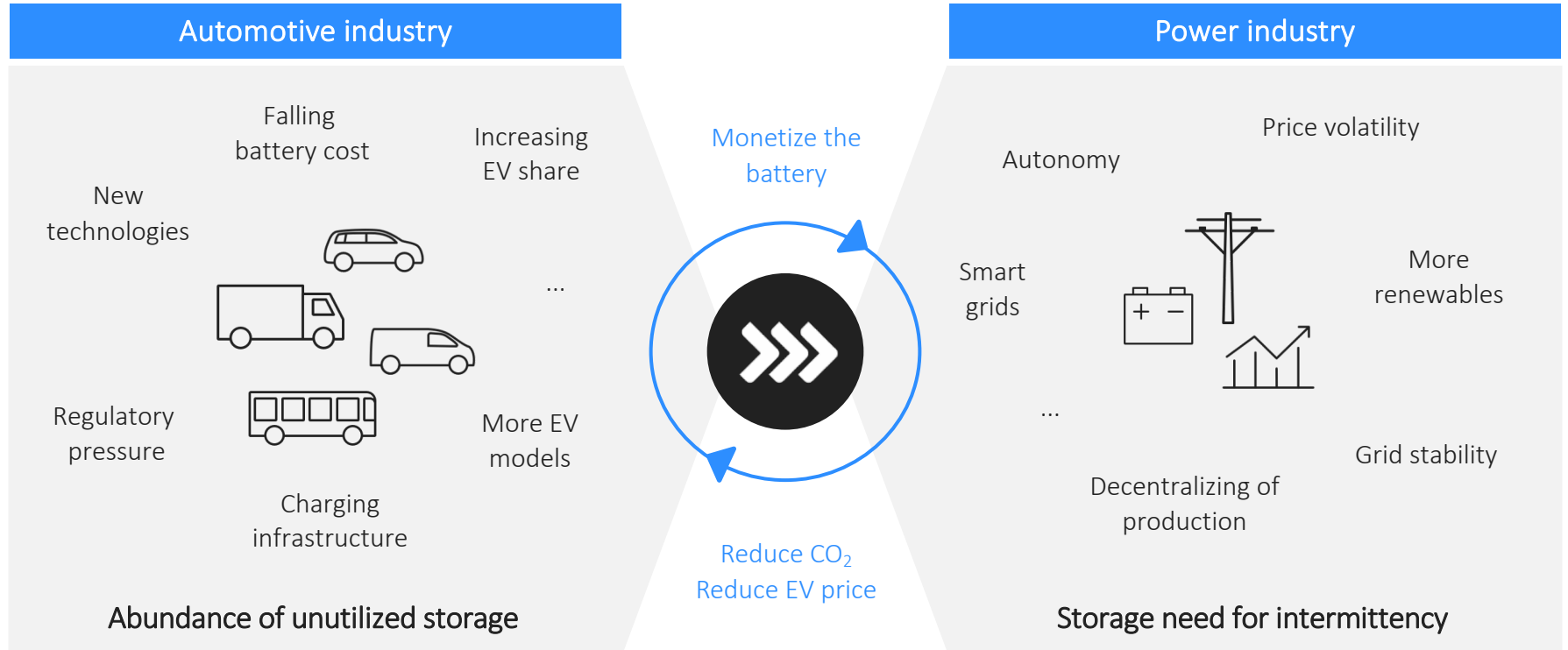
Flexible & Grid-Friendly Charging of EVs

Pablo Kühnemann, 23.03.2023



Vision of The Mobility House

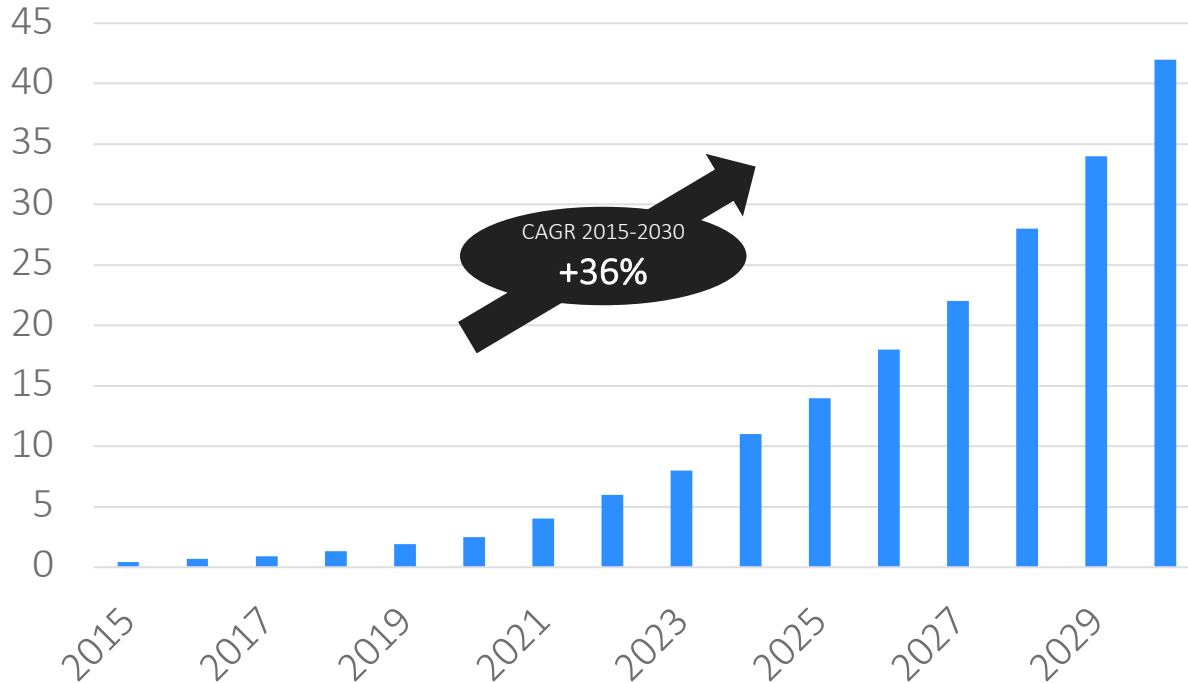
Unlock the value of combining two industries



Electric mobility is happening NOW



Projection of EV numbers in Europe [in MM]



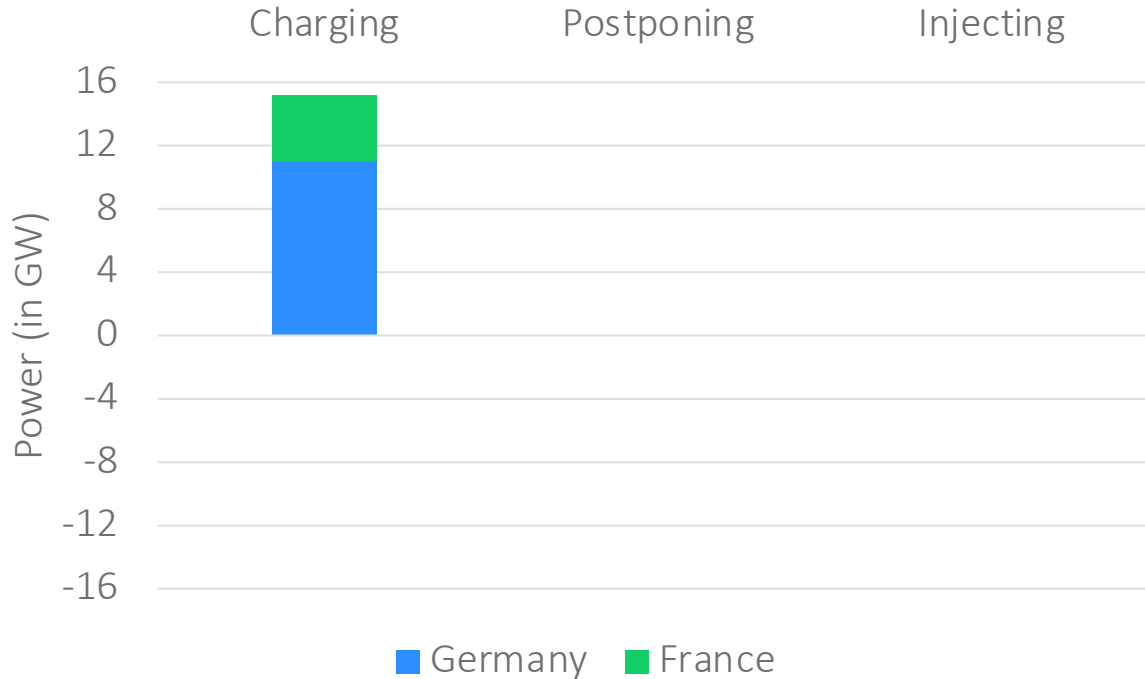
Continued drivers of EV growth

- > Government subsidies in different countries for car & infrastructure lead to increased EV attractiveness
- > Strong corporate initiatives (e.g. EV100 climate group)
- > Continued cost efficiencies and reduced prices for battery packages
- > Increased availability of EV models (currently >100; >300 by 2025)

EV charging means high power demand – but also much needed flexibility



Impact on the power system

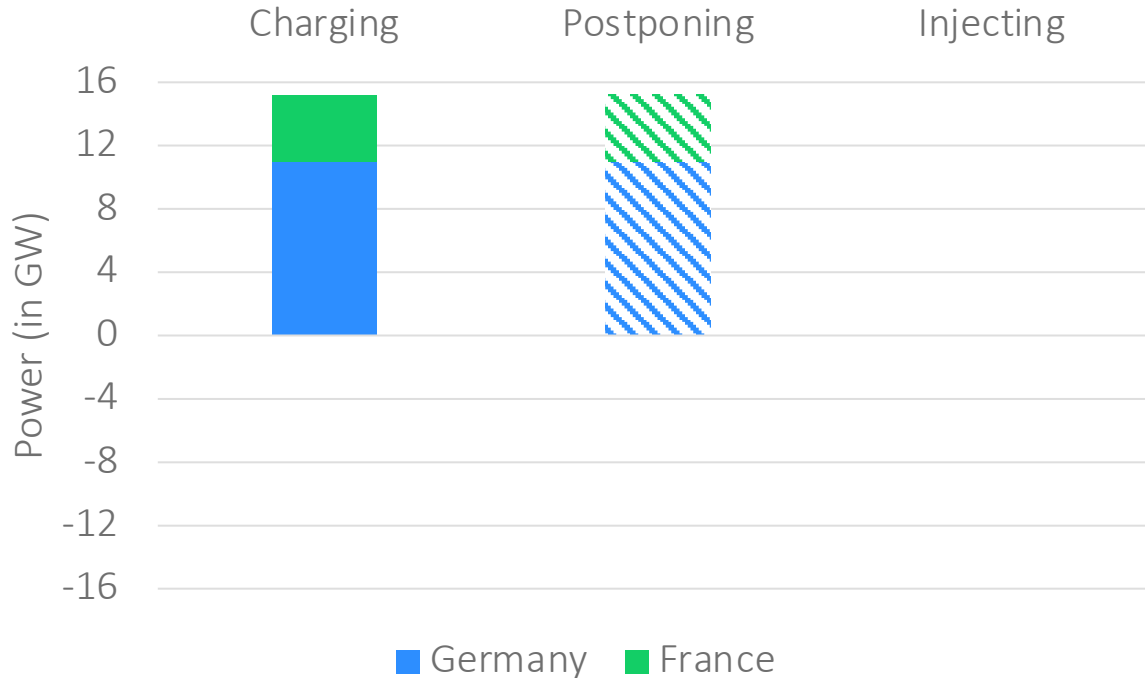


Assumptions	
>	Number of BEVs (PHEVs excluded)
•	1M (GER)
•	600k (FR)
>	Charging power
•	11 kW (GER)
•	7 kW (FR)
>	100% Plug-rate, all EVs charging / discharging

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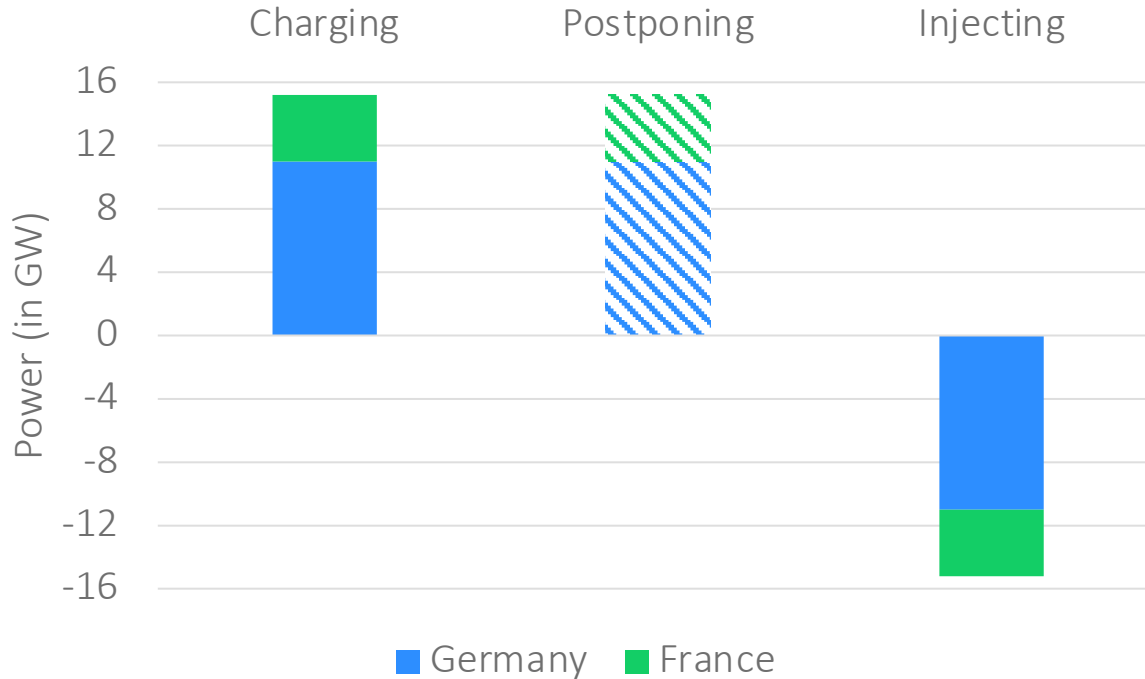


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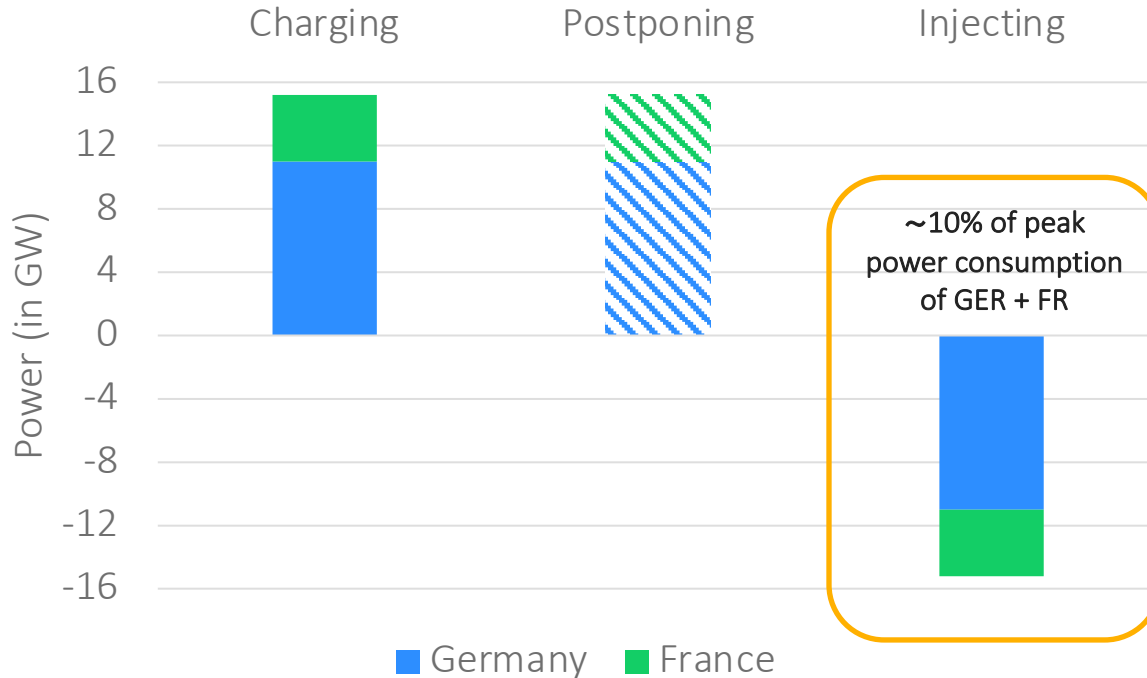


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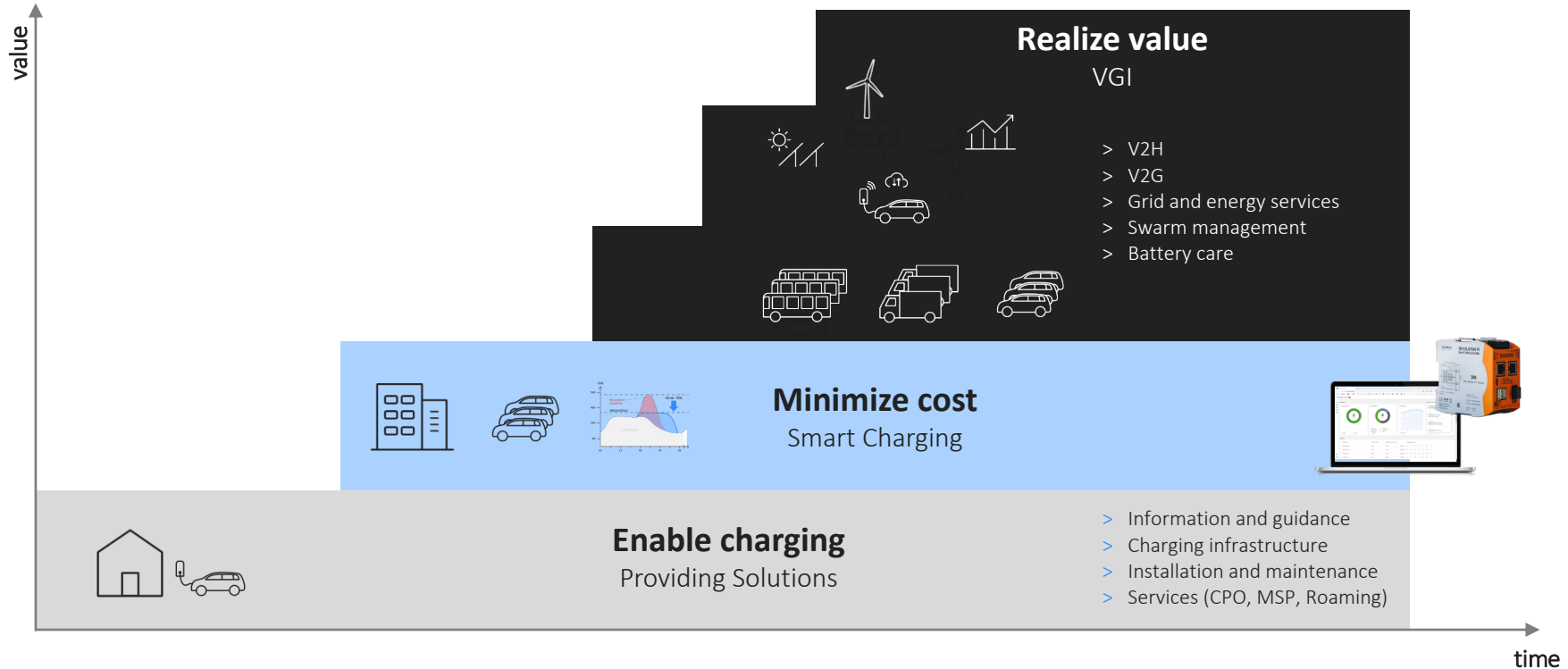


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Enabling V2G through a stepwise approach



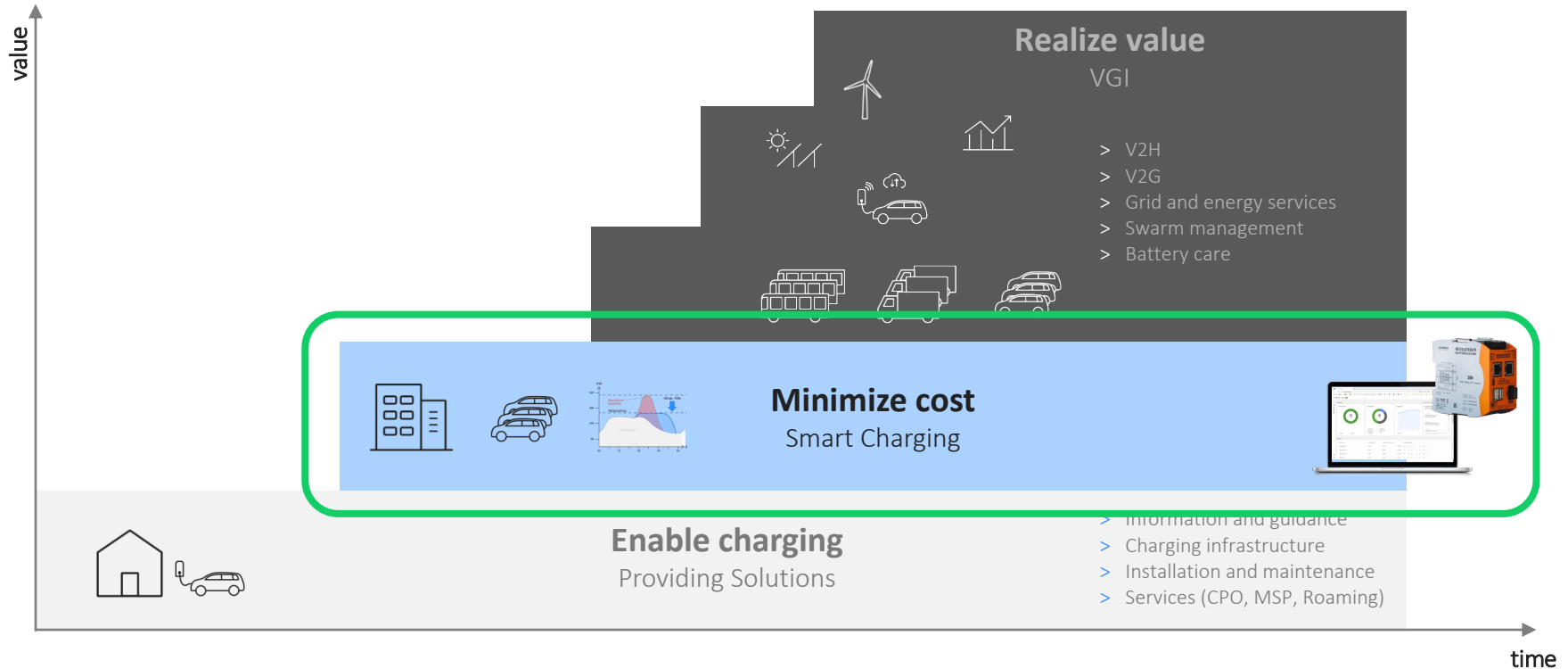
The e-mobility industry pathway



ChargePilot can drastically reduce costs for fleet operators



The e-mobility industry pathway





ChargePilot helps fleet operators



Example of minimizing costs

- > **Customer:**
An Post (Irish postal service)
- > **LOCATIONS:**
>100 depots in Ireland
- > **CHARGING:**
~3000 wall boxes installed (22-50 kW)
- > **Service provided by TMH:**
Dynamic load management, monitoring & time of use optimization

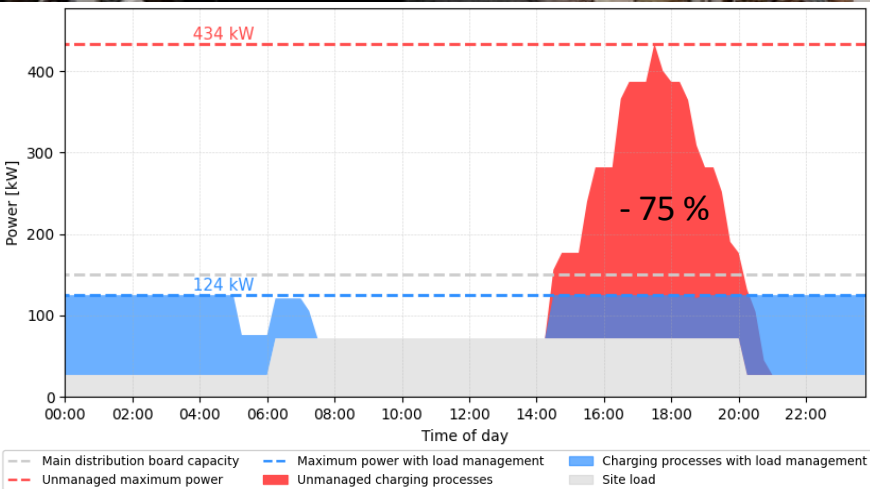


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approx. 50 MW*

Saving grid connection power



>500,000 €/year*

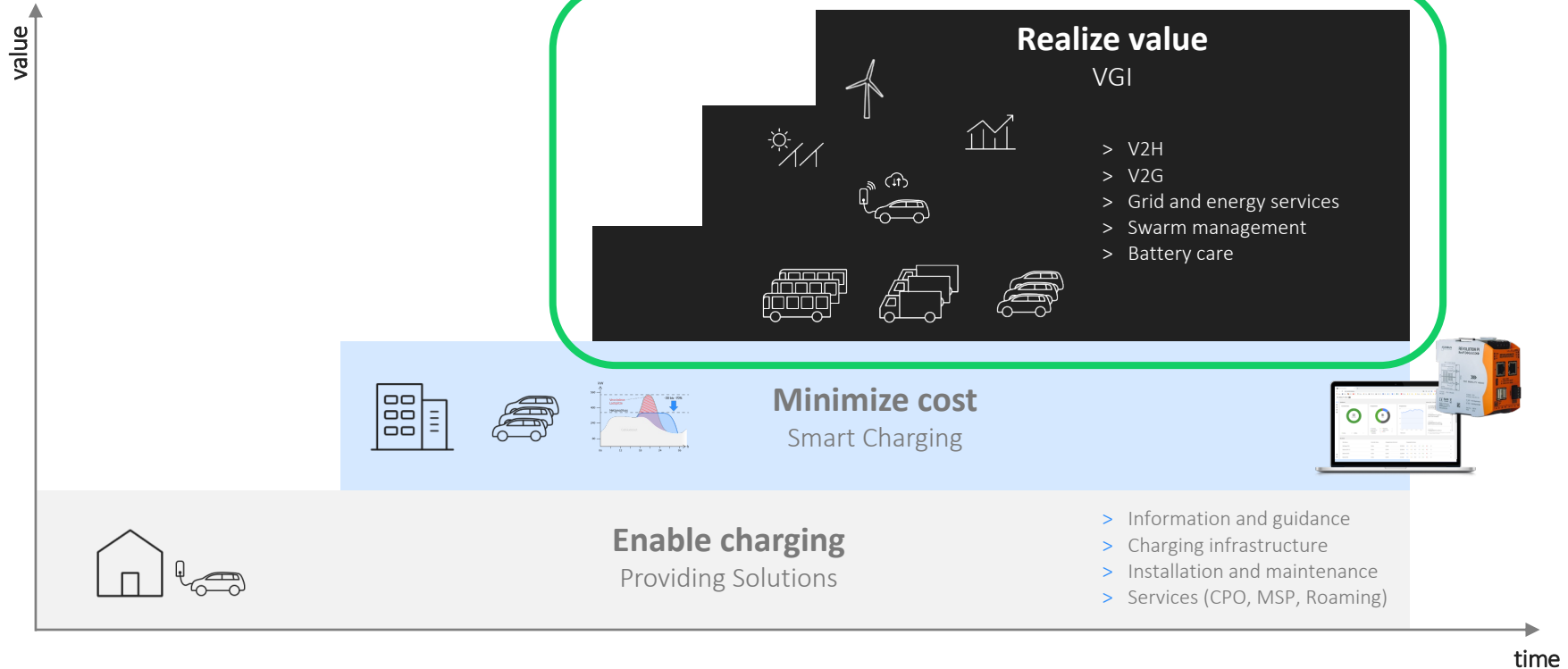
Operational savings

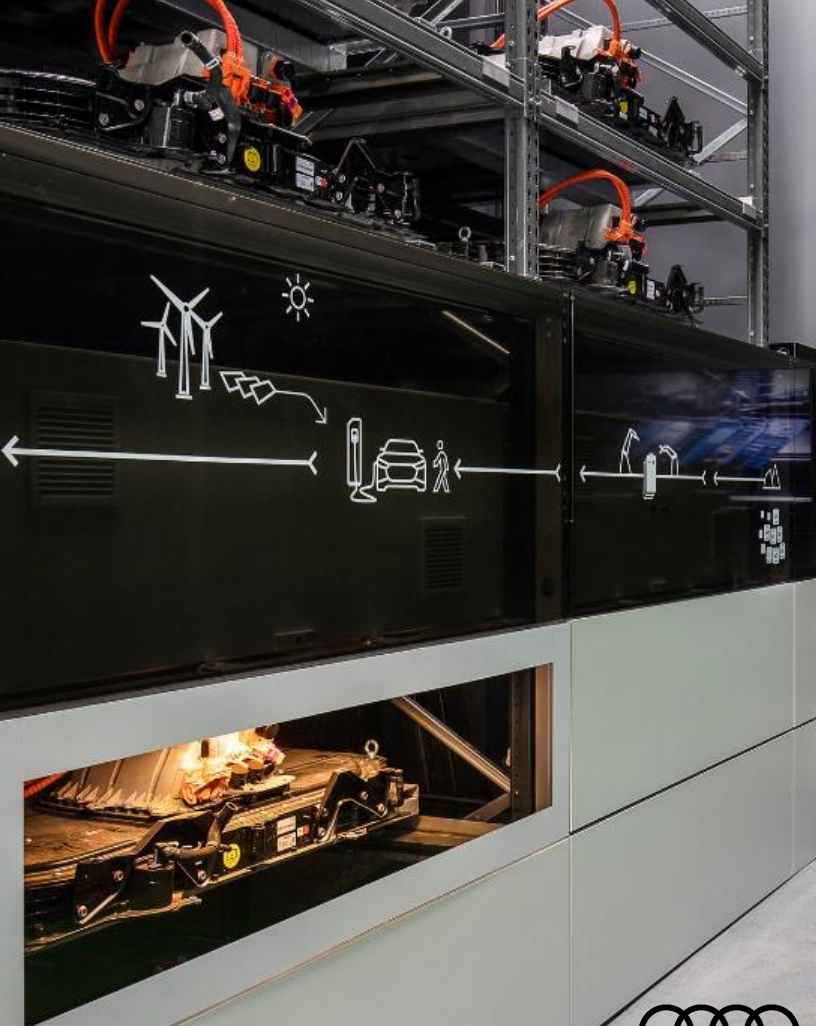
* Based on AnPost input data

VGI leads to added value for customers



The e-mobility industry pathway



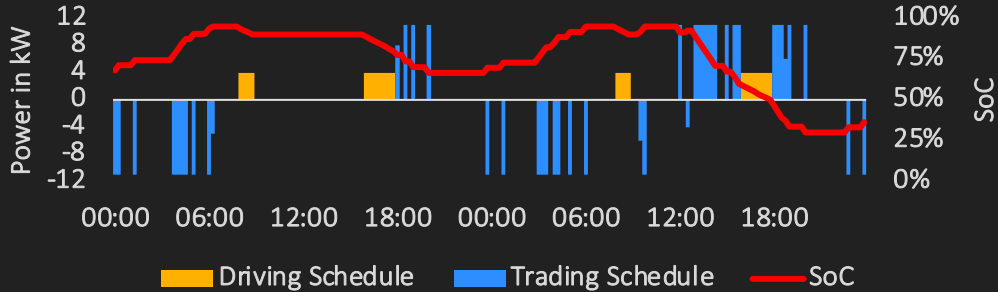


VGI proof of trading potential

Realizing value via TMH technology



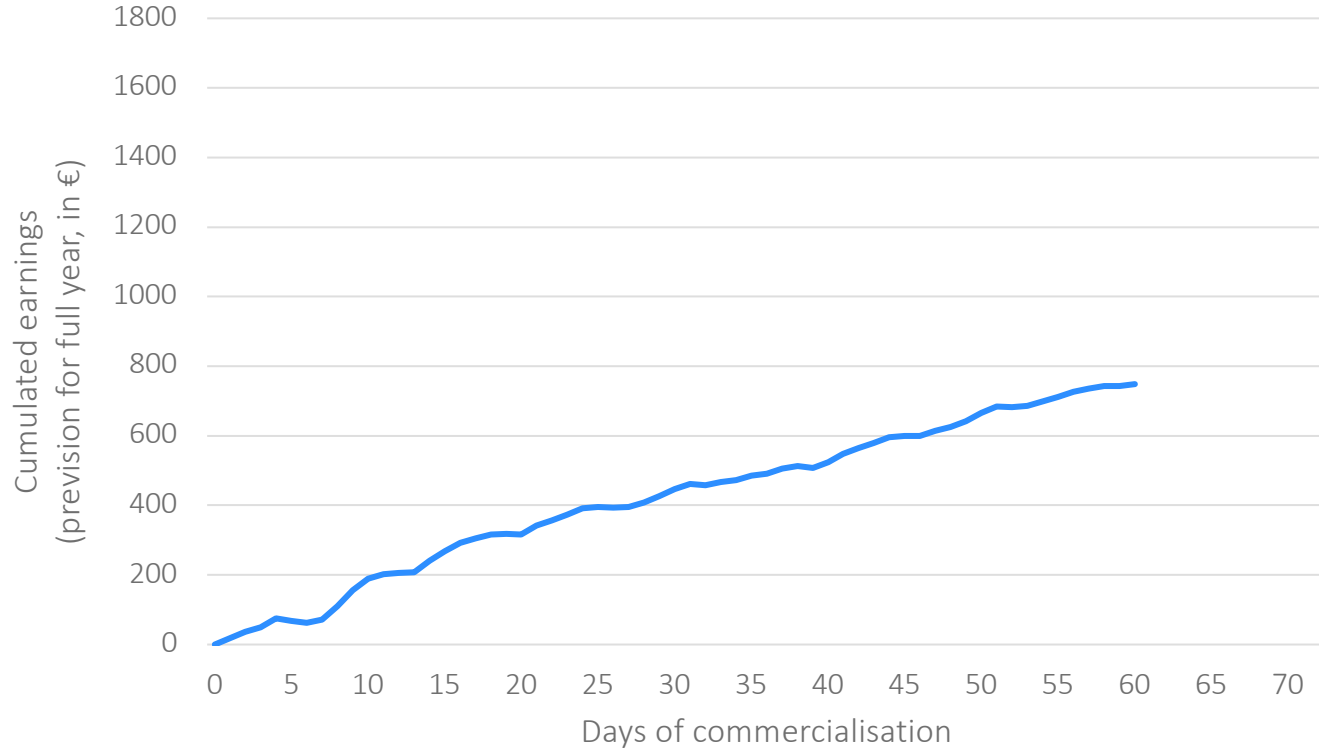
- > **PERIOD:** First half of 2022
- > **FLEET OF BATTERY PACKS:** 18 batteries (each 73 kWh & 11 kW)
- > **APPLICATION:** Intraday trading
- > **SIMPLIFICATION:** Perfect prediction of driving pattern¹ and plug-time²
- > **SECURING CUSTOMER COMFORT AND BATTERY HEALTH:**
 - Tradable SoC range: 30% – 95%
 - Minimum SoC at departure: 60%
 - Total full cycle equivalent: 84 FCE/a (of which 38 for V2G)



VGI proof of trading potential is a success



Realizing value via TMH technology



V2G

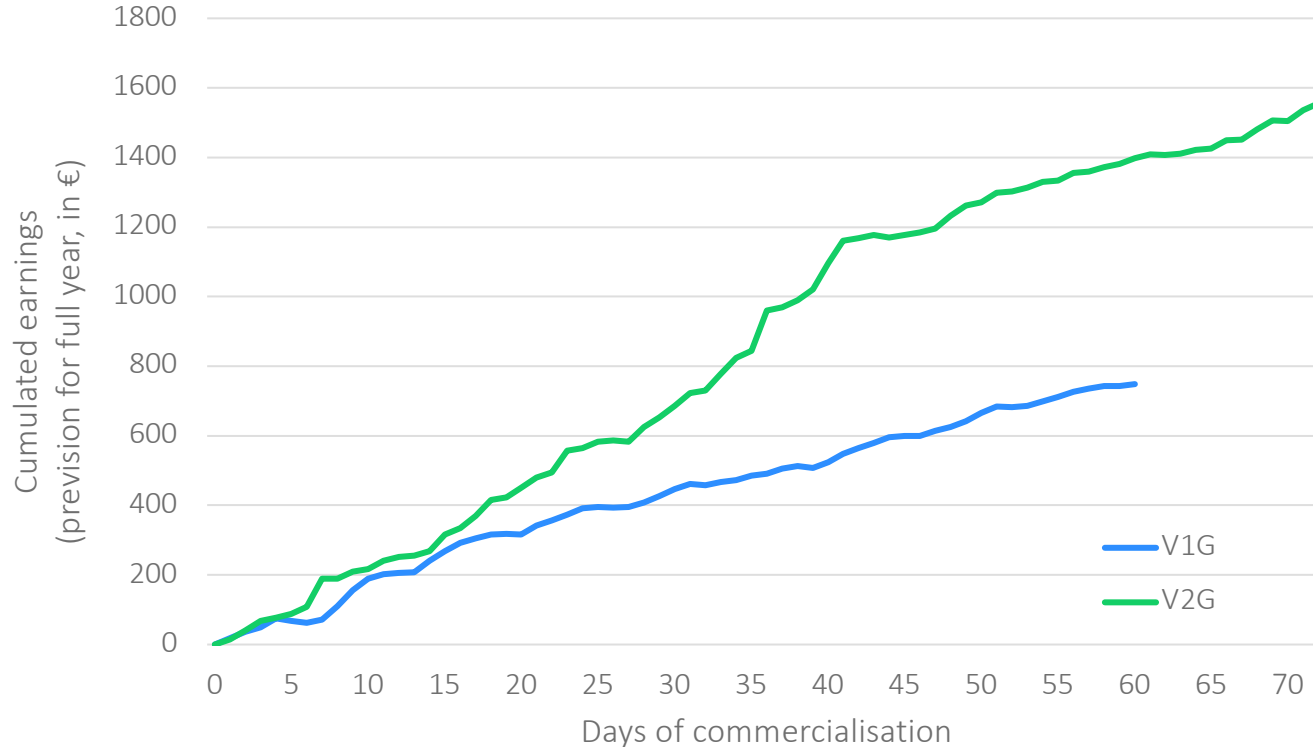
- Value added: 1,690 €/EV/a
- Driving cost zero

V1G

- Value added: 830 €/EV/a
- Driving cost halved

VGI proof of trading potential is a success

Realizing value via TMH technology



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Vielen Dank & Merci beaucoup