

# Facilitating Electrification of Transport

## UK Power Networks

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# Agenda

- Who is UK Power Networks?
- UKPN's EV Strategy and EV uptake
- How do people charge their EVs?
- Smart solutions – smart charging

# About UK Power Networks

Measure	Data	% of industry
End customers	8.3m	28%
Population served	c. 20m	28%
New metered connections	46,000	32%
Distributed generation connected	9GW	32%
ED1 totex allowance	£6,029m	25%
Energy distributed	85TWh	29%
Peak demand	16GW	28%

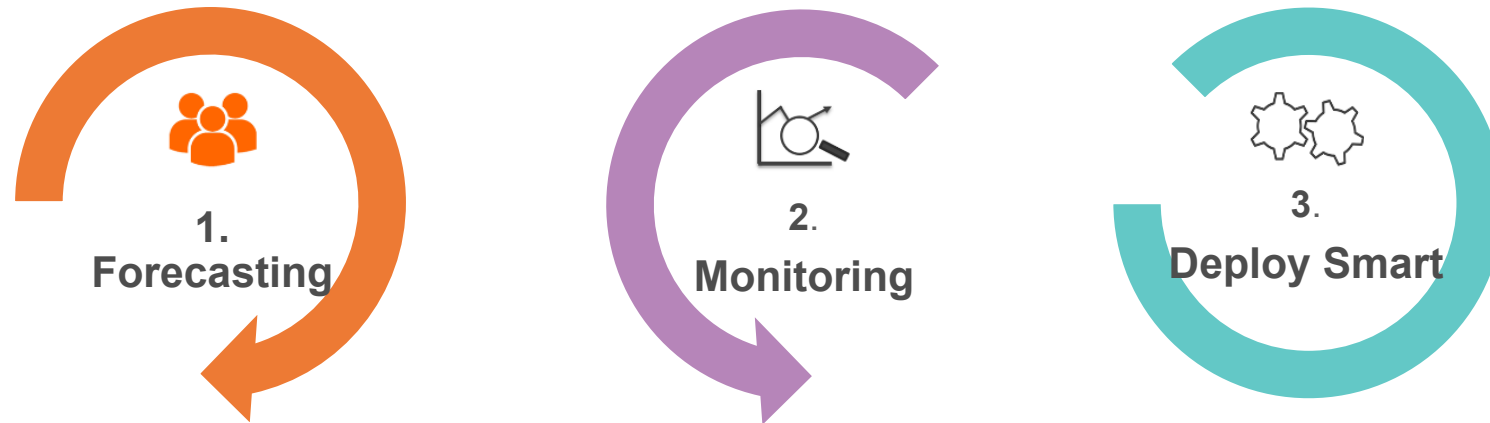
We own and operate 3 of 14 networks in the UK:

- Eastern
- London
- South east



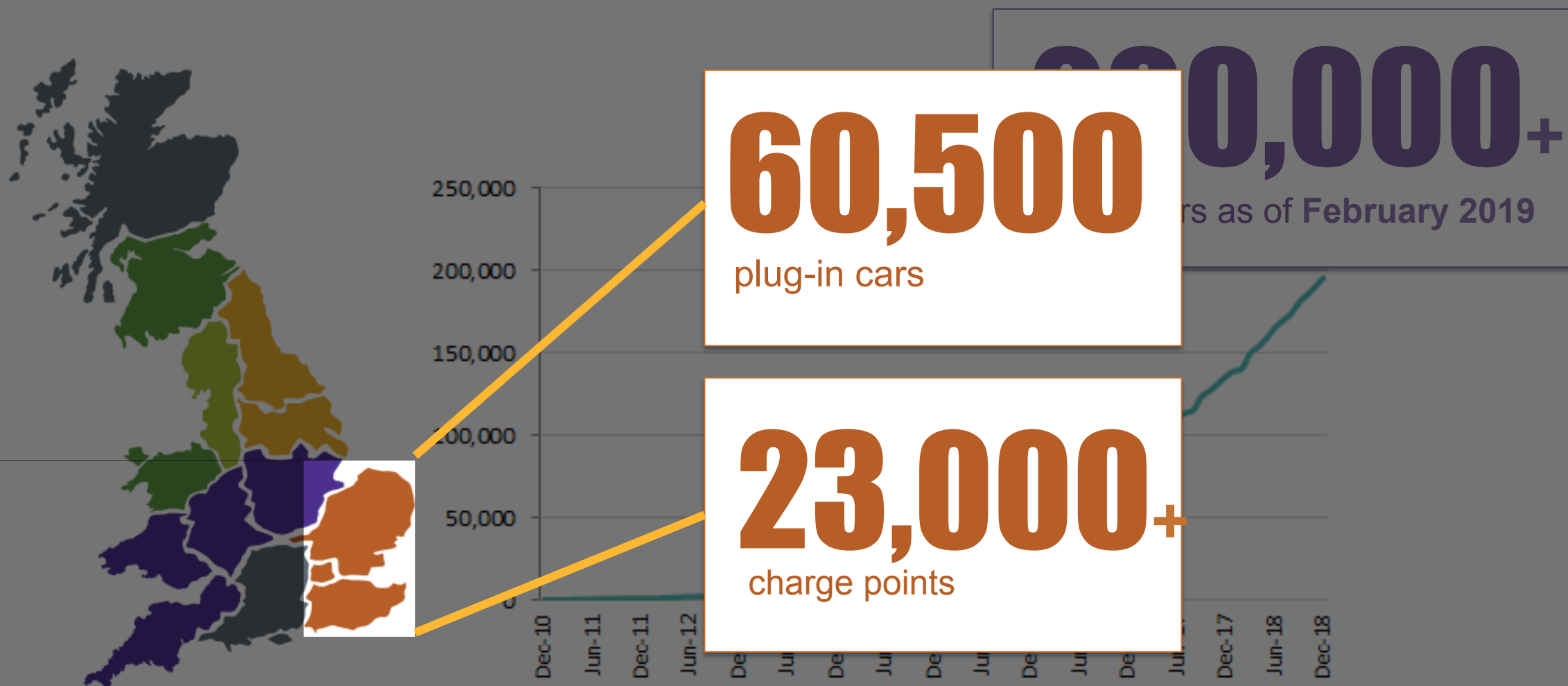
# UK Power Networks' EV Strategy

*Facilitate the EV uptake through top engagement, great customer experience and a future ready network*



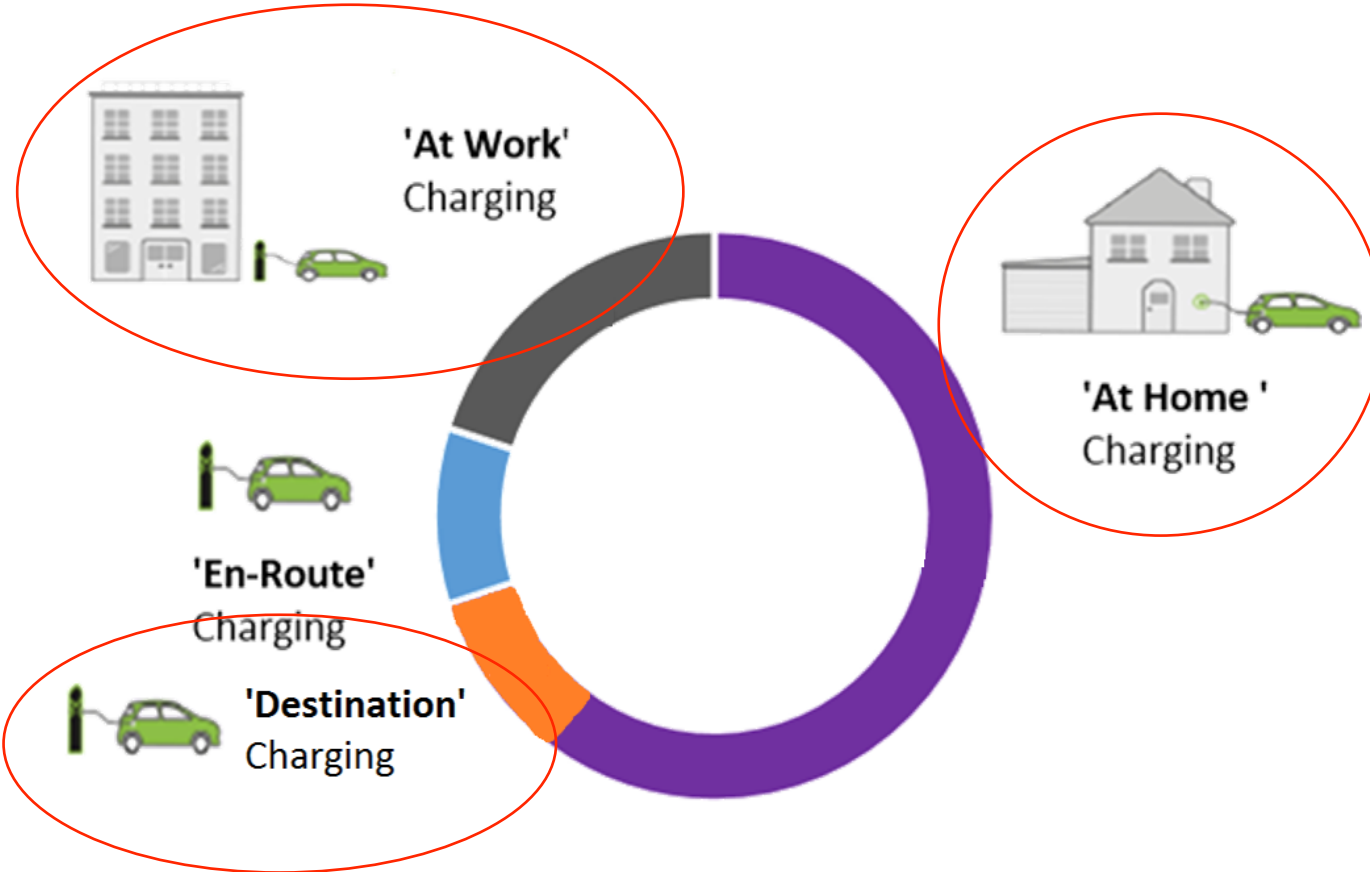
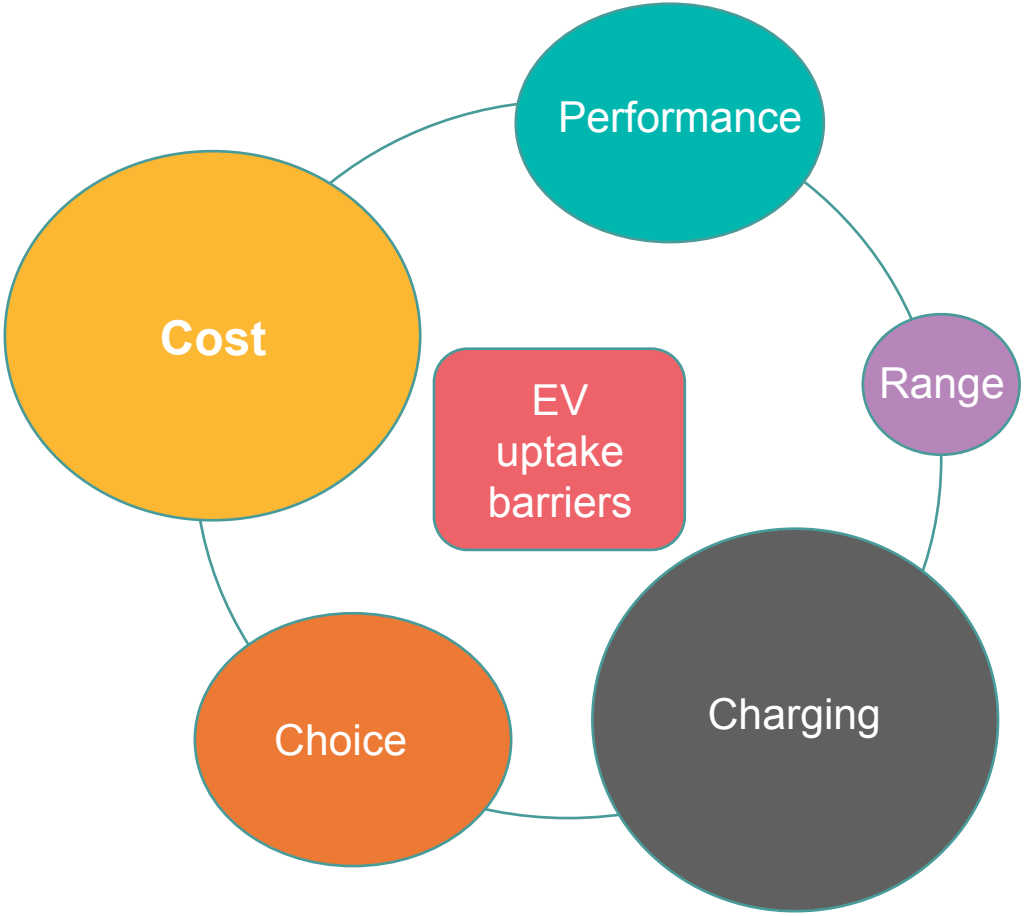
**A facilitator of, not a blocker to, the Low Carbon Transition**

# Market intelligence – forecast



We expect up to **4.1m** plug-in cars across UKPN by 2030

# EV Barriers & Charging Segments



**Focus on the Low Voltage Network first**

# How do people charge their EVs?

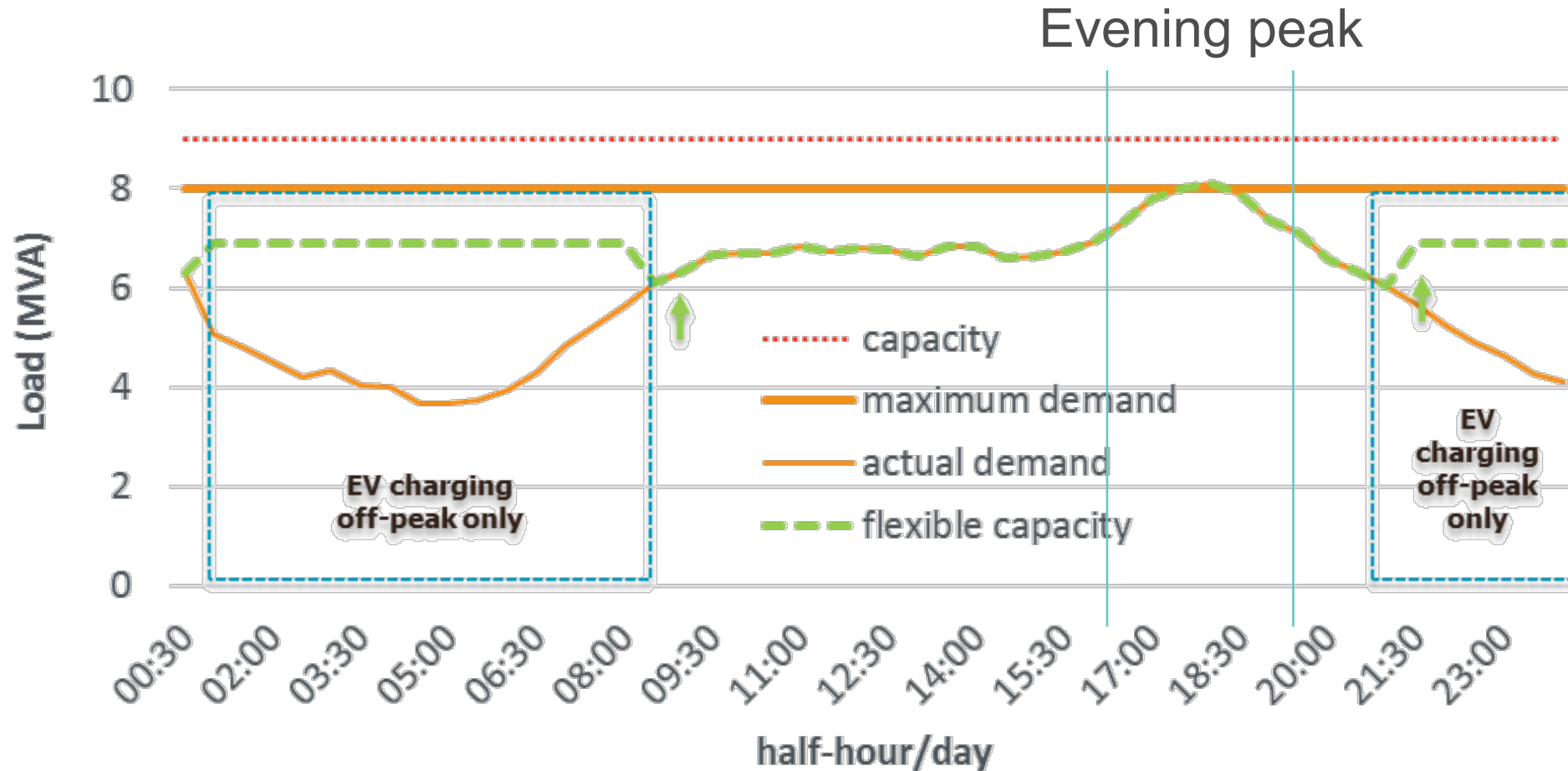
Users with access to home charging use **rapid public charge points once every 3 weeks**



Charging **at home** or **at destination** is **cheaper & more convenient**

**Public chargers** used **less than once a day**

# What is smart charging?



Smart charging is about how we can incentivise customers to change their charging patterns to avoid creating new peaks in demand that trigger reinforcement



# Thank you

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# Mapping EV LV Constraints

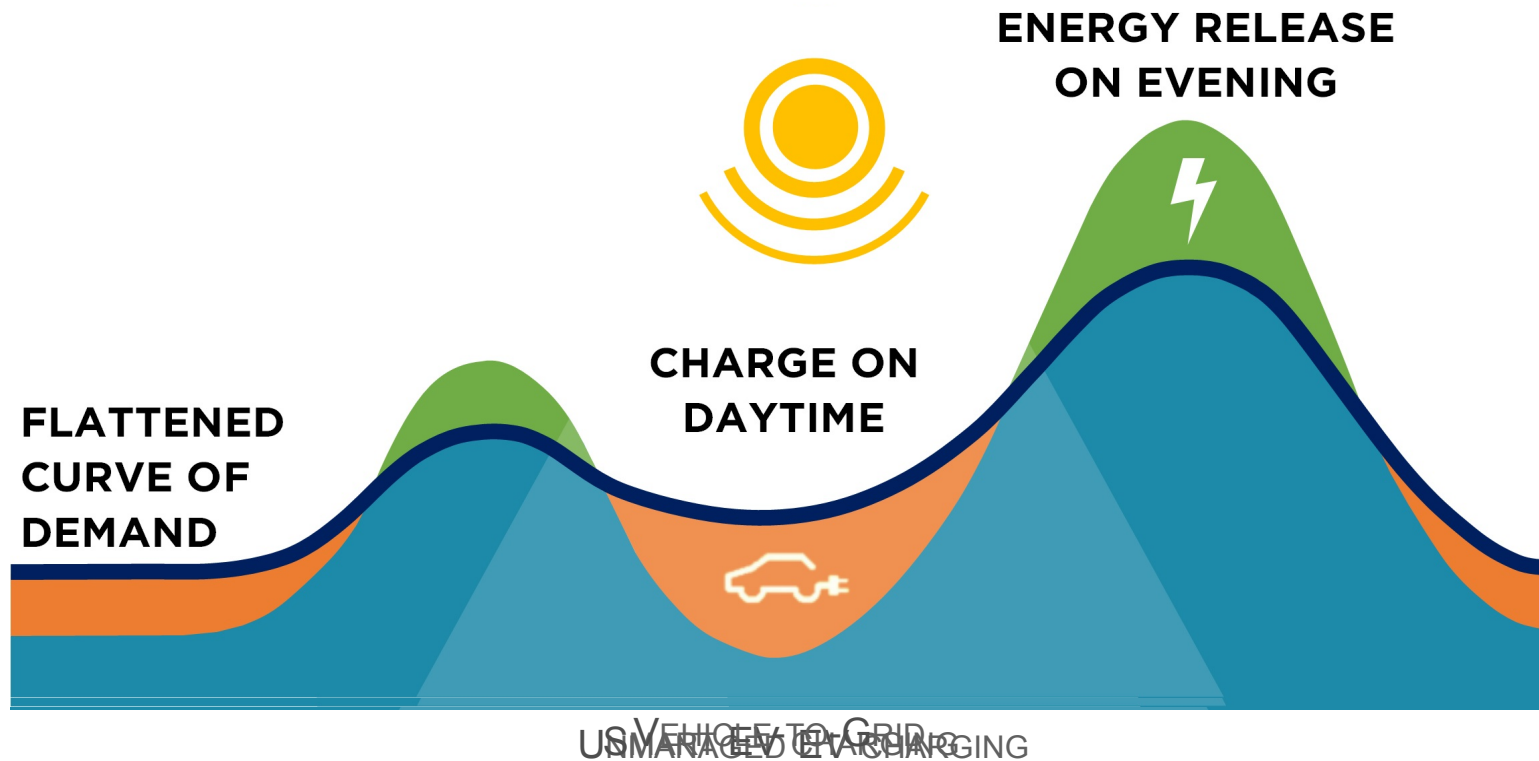
- 2019 Constraint Areas
- 2020 Constraint Areas
- 2021 Constraint Areas
- 2022 Constraint Areas
- 2023 Constraint Areas



# EV batteries as distributed energy resource

3. Deploy smart

EVs, when smartly managed, act as controllable loads. EVs with the Power Grid

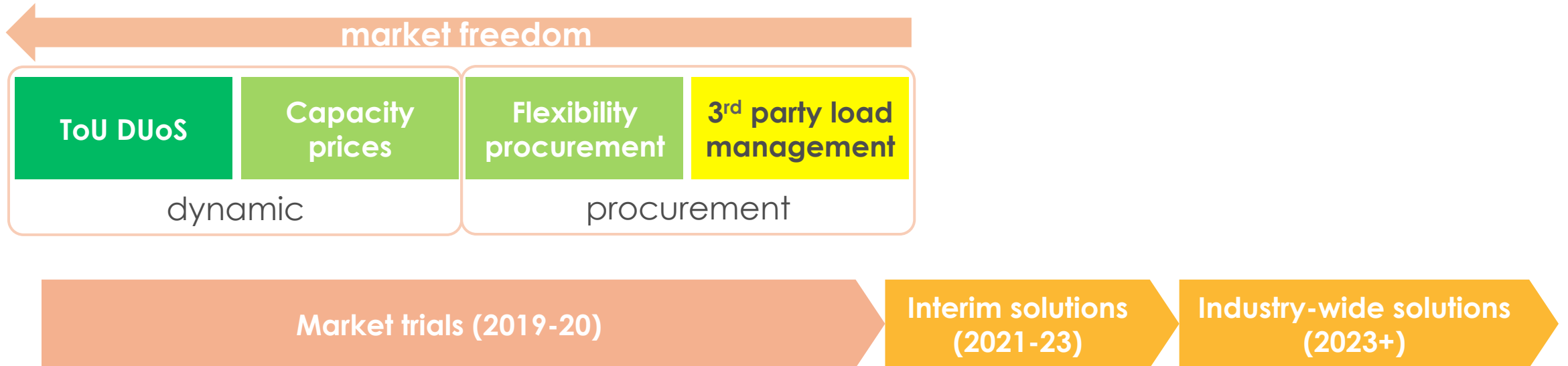


- EVs can act as **distributed storage**, providing energy back to the Grid
- EV drivers earn **rewards** in exchange for grid services

# Shift – market trials

To investigate how DNO can support the **market** to manage smart charging

**Trials scope areas:**



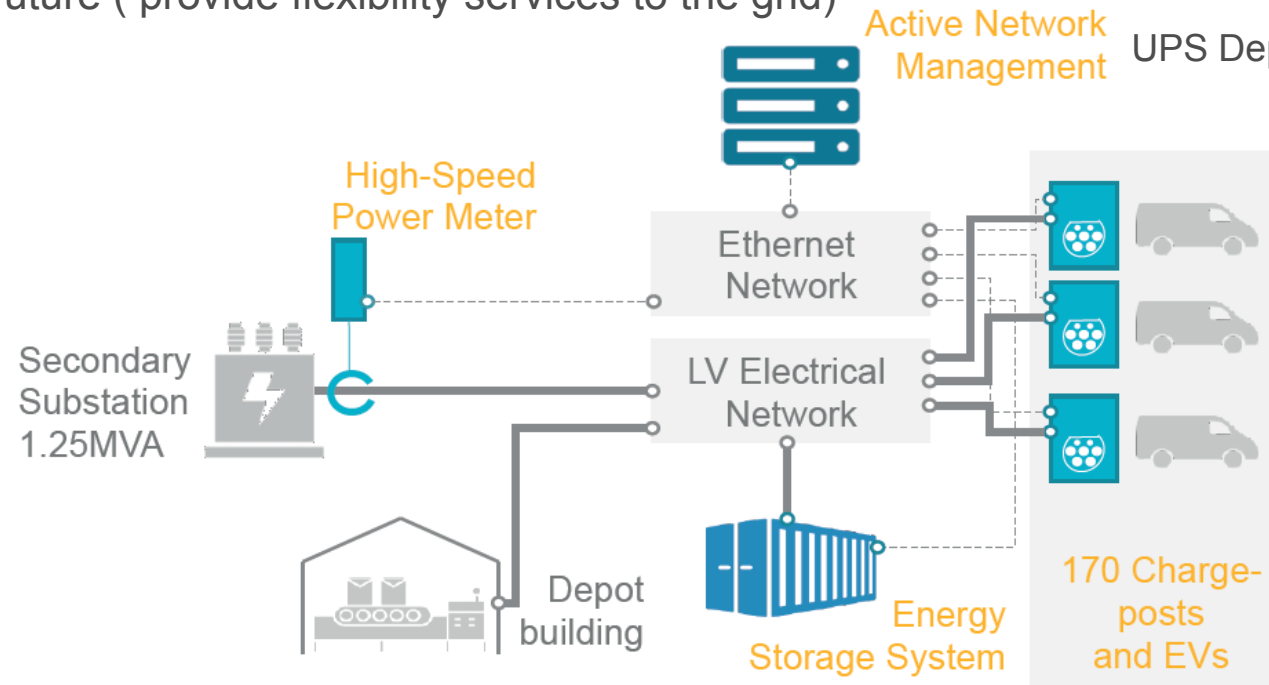
# How new technology can support your connection

## Behind the meter smart:

- Smart charging reduces the capital expenditure required for fleet electrification
  - An uncontrolled peak demand of 2200 kVA is catered by a 1250 kVA grid connection using smart charging
- Smart charging can reduce operational costs
  - Reduce cost of energy (benefit from Time of Use tariffs)
  - Earn revenue in the future ( provide flexibility services to the grid)



UPS Depot – intelligent network analysis

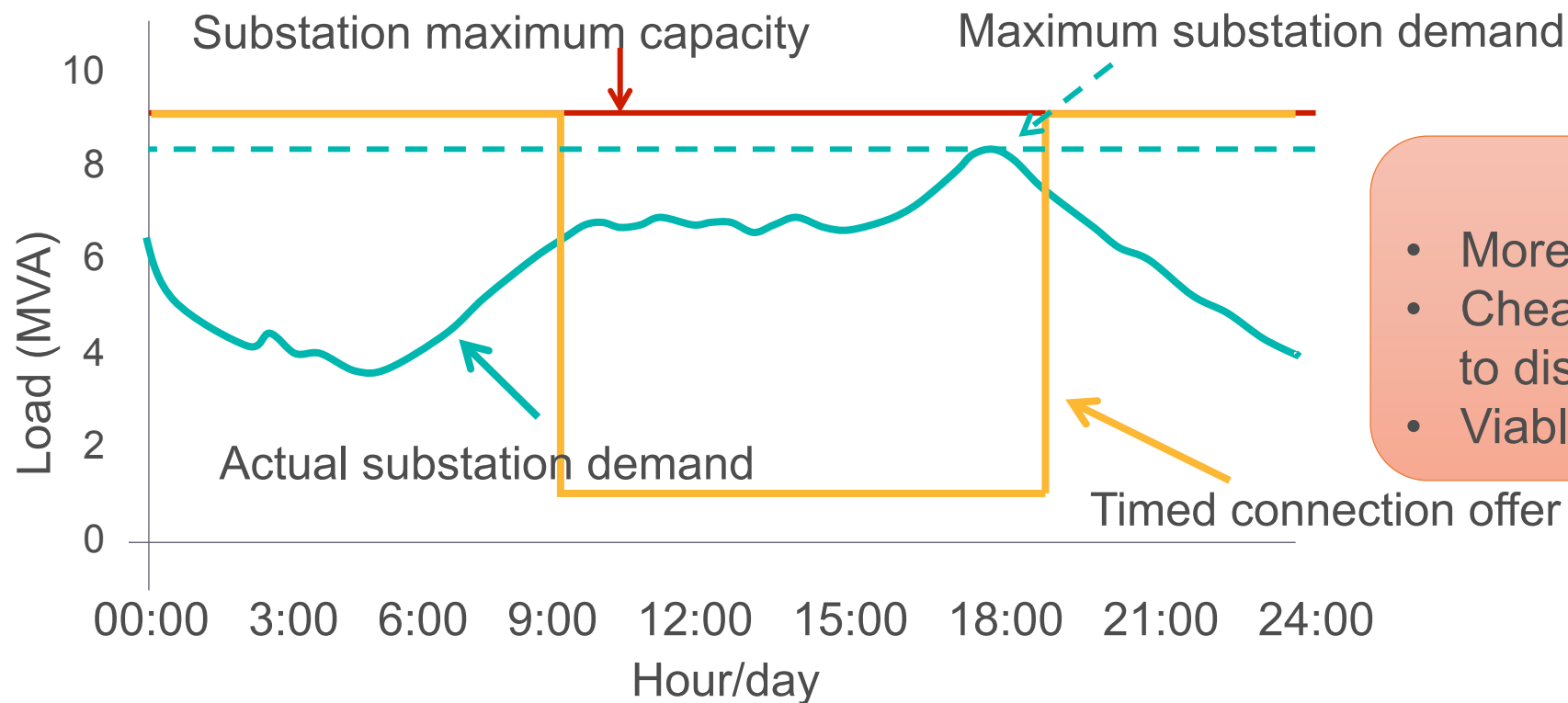


UPS Smart Charging System



# Timed connections

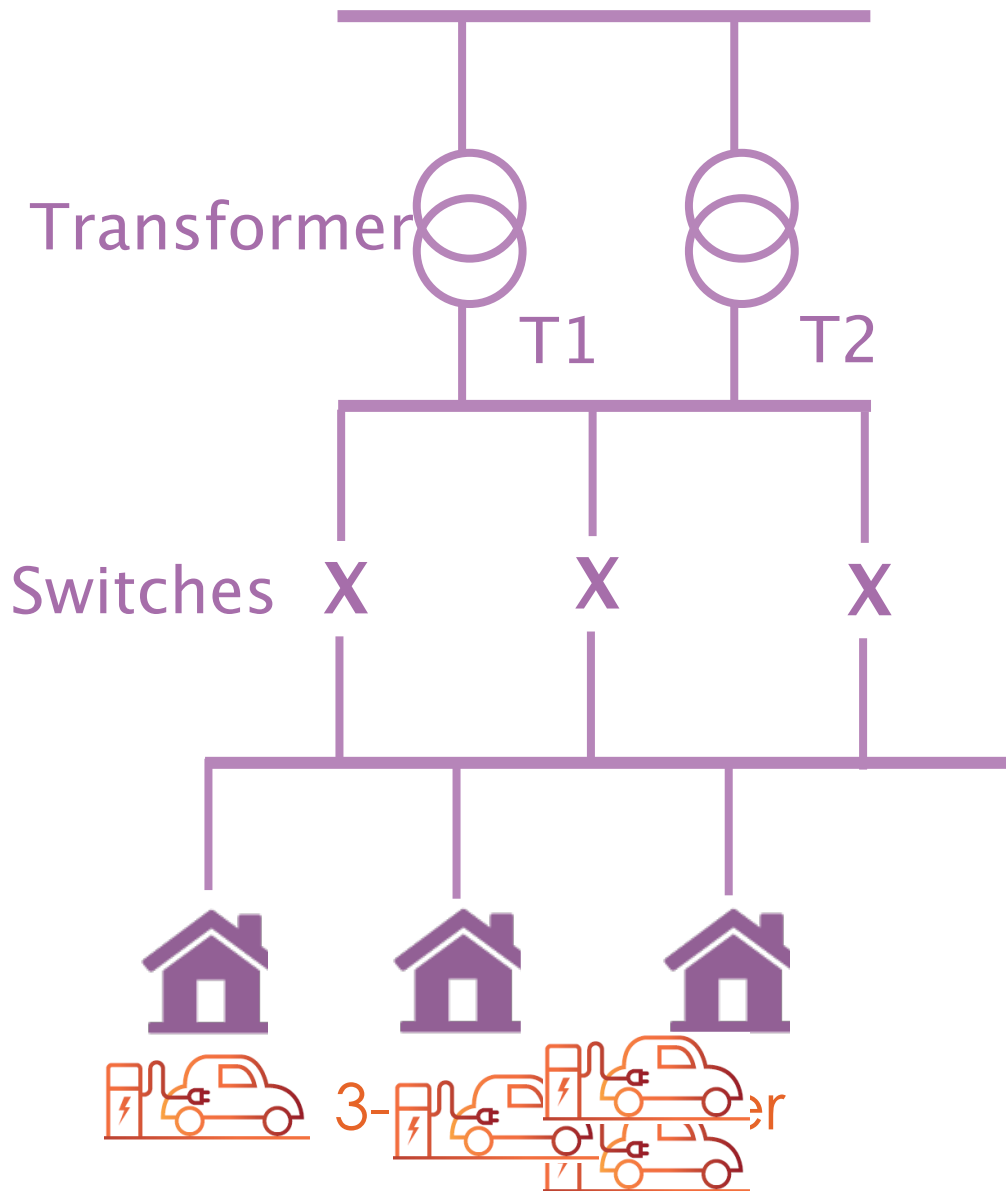
A Timed Connection gives connecting customers, such as Electric Vehicle (EV) charging hubs, a power boost outside of network peak times



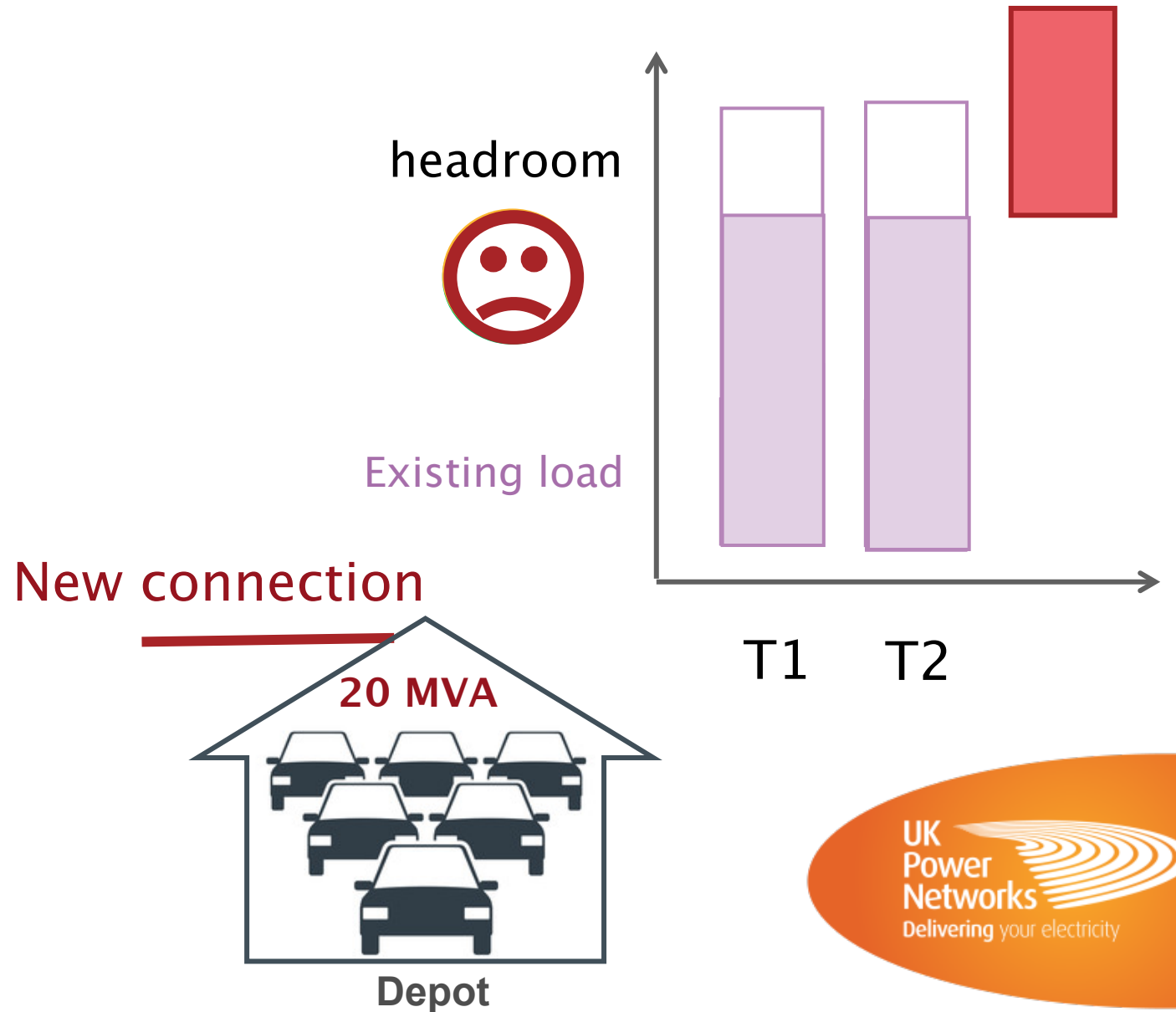
## Customer benefits

- More capacity at lower cost
- Cheaper and faster connection to distribution network
- Viable transition to EVs

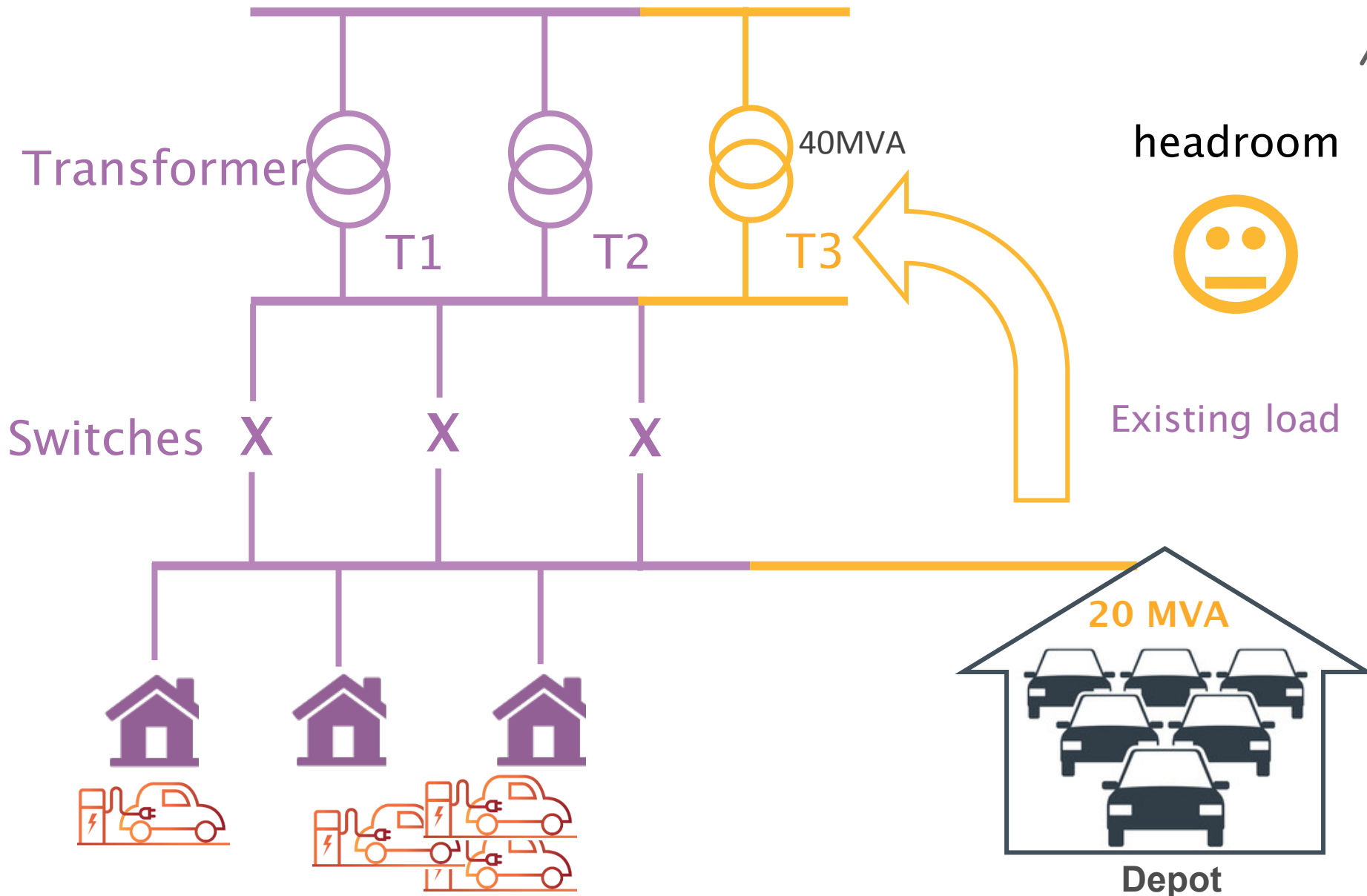
# How we manage the network today



## Network capacity



# How we manage the network today

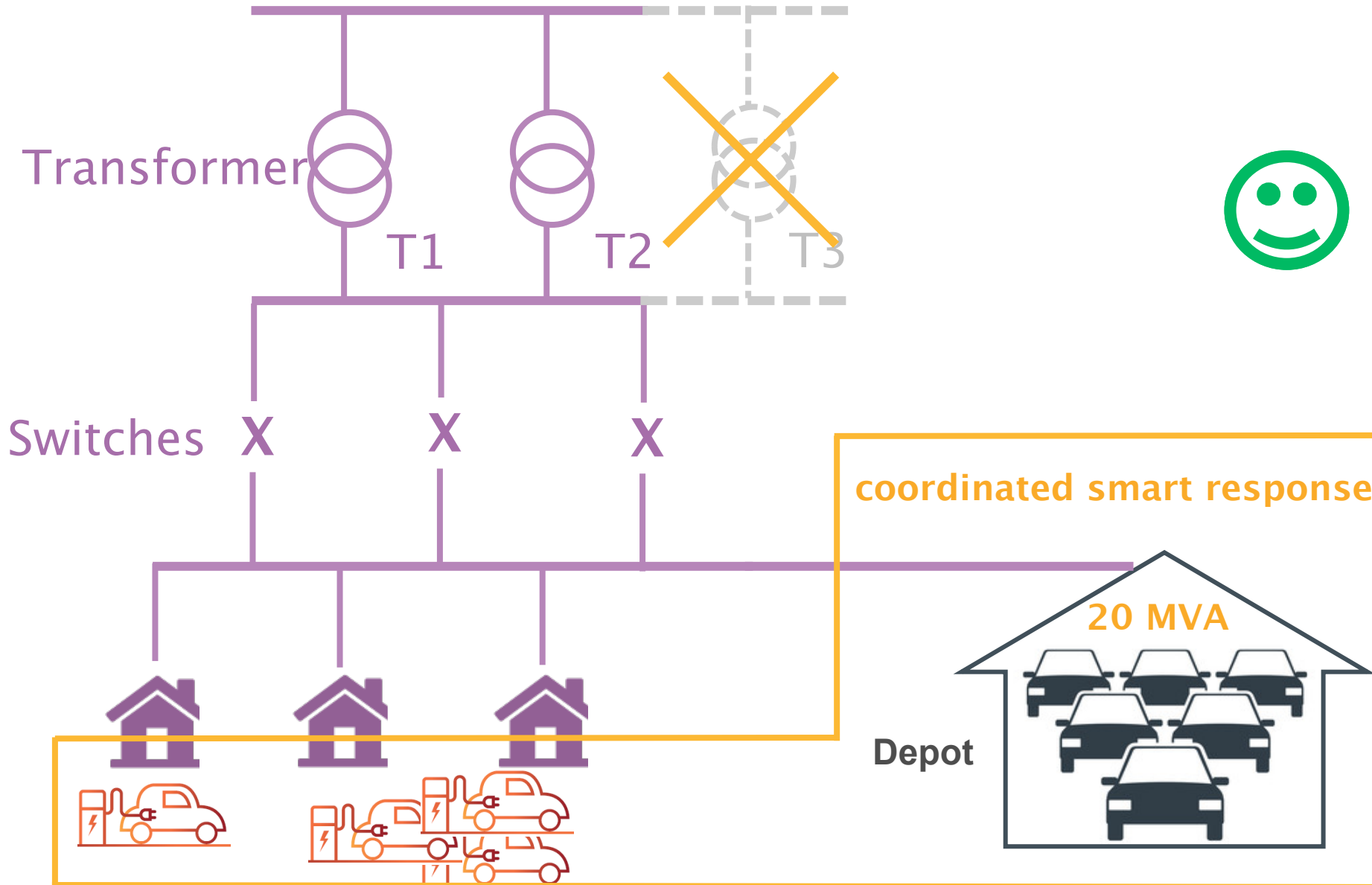


## Network capacity

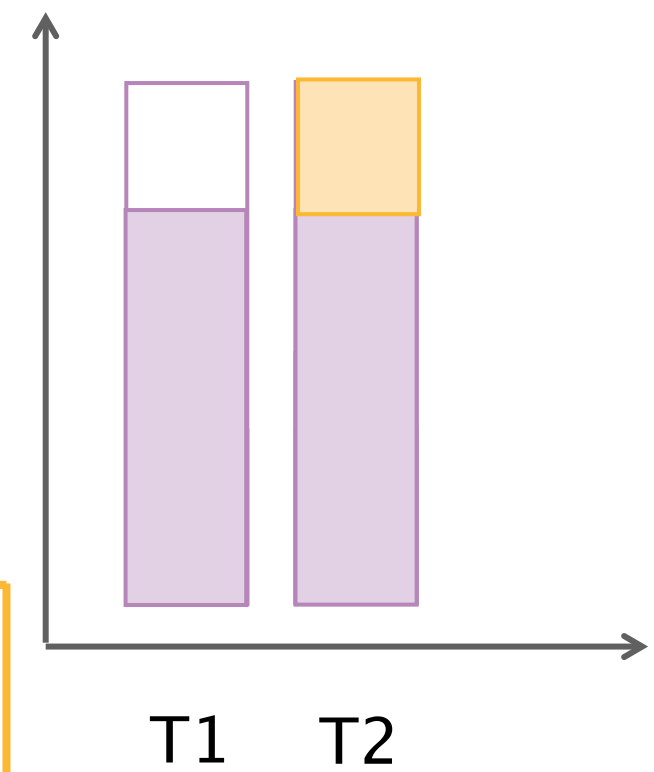




# In a smart world...



## Network capacity



# Urban Energy Club

## Challenge

Flexibility from domestic customers has been limited by their ability to own storage or generation assets and lack of simple commercial options.

## Solution

Testing a flexibility opt-in platform for domestic customers living in blocks of flats with shared community owned assets.

