

# Intelligent Octopus

## Harnessing Demand Growth & Flexibility

March 2024



octopusenergy

# Agenda

- **Introductions**
- Overview of the Octopus Energy Group
- Intelligent Octopus
  - Overview
  - Unlocking consumer flexibility
  - Optimisation

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Use **technology** to drive  
the global green energy  
revolution.

Make it **cheaper** and  
**faster** for **people** and  
the planet.



# Since 2016, we've been building the first fully integrated post-transition energy company

**27**

countries

**7.7m**

customers

**7,000**

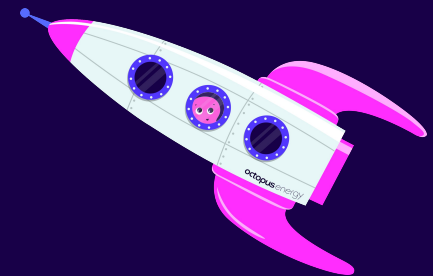
employees

**54m**

accounts  
contracted to  
Kraken platform

**\$7bn**

renewable  
assets under  
management



# Octopus works across 4 key areas, each one critical for the transition

## Octopus Energy

### Generation



- **\$7bn** generation assets managed
- **19** countries
- Fan Club community generation

### Retail Energy



- **7.7m** customers / **13m** accounts
- **8** countries
- **#1** for customer service
- **World-leading** consumer flex
- Europe's **largest VPP** (120k+ devices)

### Services



- **EV** leasing & EV charger installation
- **Heat pump** tech & installations
- **Solar** and **meter** installations
- **Electroverse EV charging** network

## Kraken

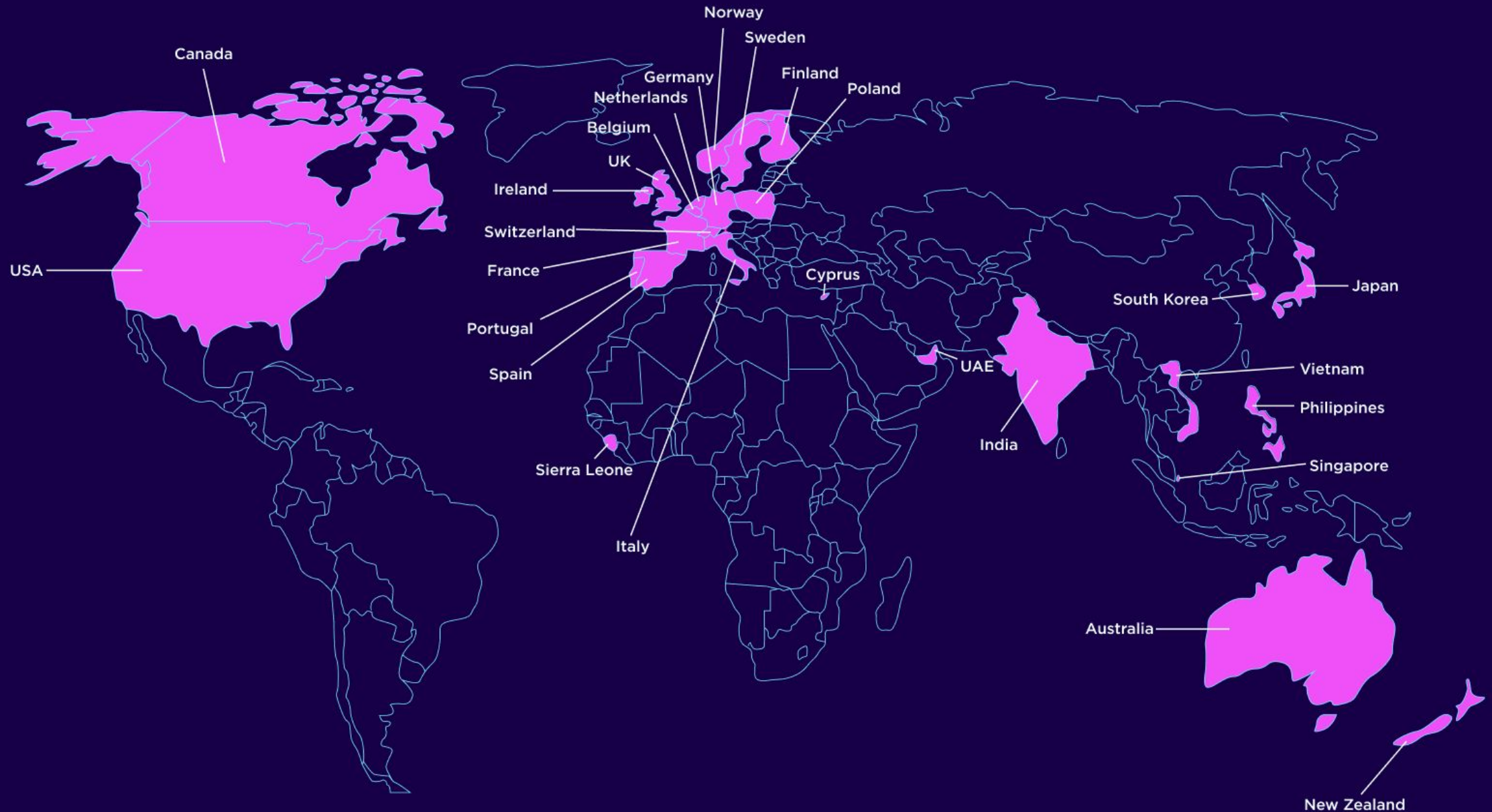
### Tech



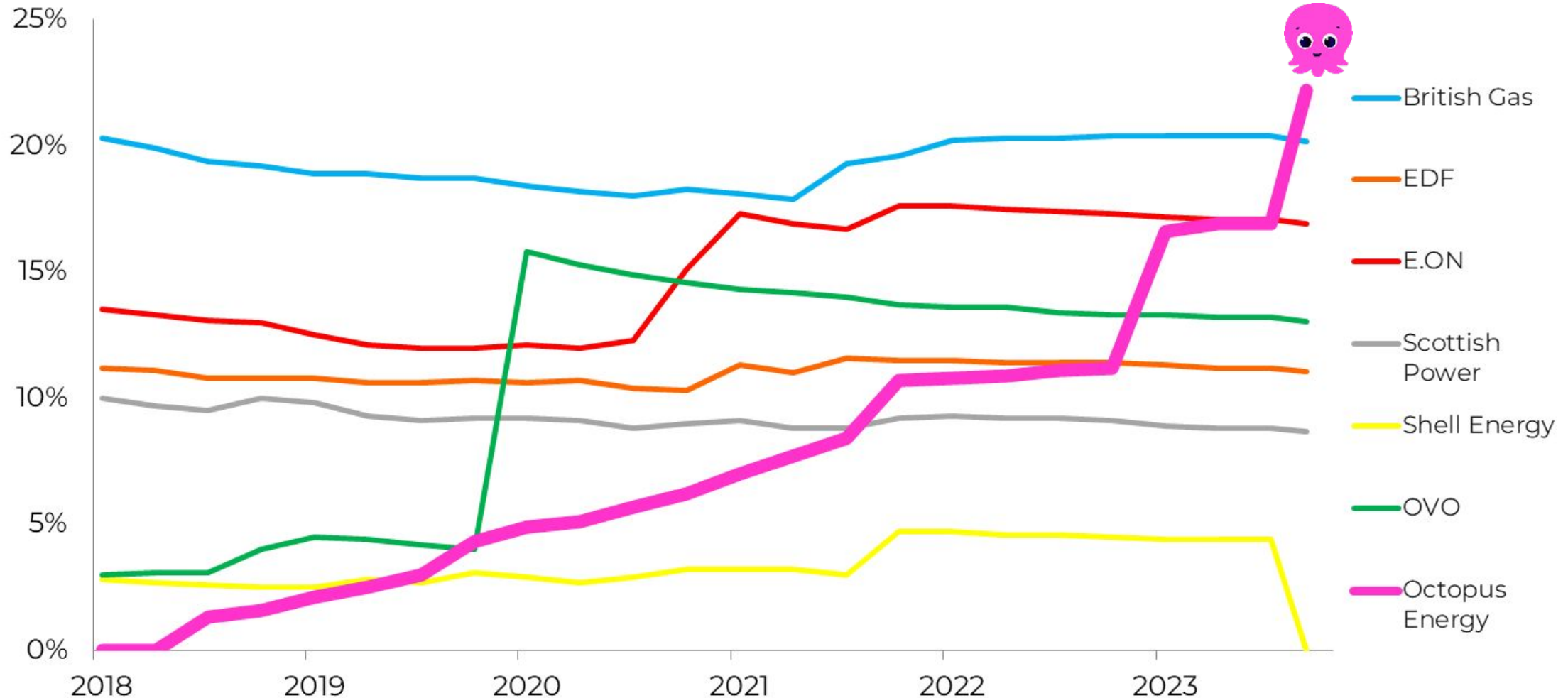
- **Single platform** to manage customers and assets
- **16 countries**
- **54m** contracted retail accounts
- **38GW** infrastructure assets contracted



# Active in 27 countries across 5 continents



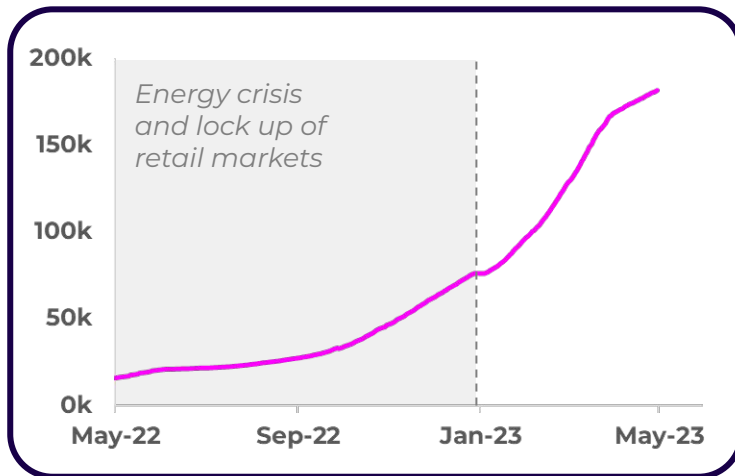
# Market share of UK domestic electricity suppliers





# We're replicating this winning model around the world

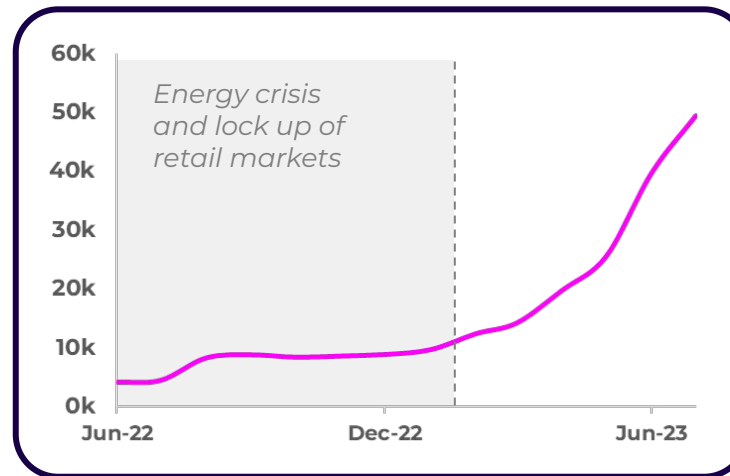
Japan



現行の電力会社からの変更手続きも分かりやすく、簡単で早かったです！

東京都 ツヨシ ★★★★★

Spain

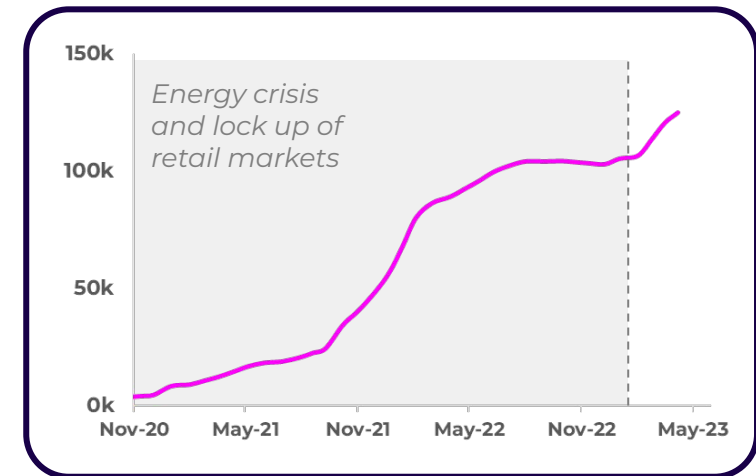


Octopus Energy

4.9 ★★★★★ (442) · Energy supplier

C. del Pintor Sorolla, 5, 2 · +34 900 759 190

Germany



Octopus Energy Germany

Reviews 4,435 • Excellent



4.8 ⓘ

✓ VERIFIED COMPANY

# Our success is underpinned by Kraken, the operating system for utilities

## CUSTOMER

- Customer Journeys
- CIS & Billing
- Meter Data Management
- Customer Relationship Management (CRM)

## FIELD

- Job & Workforce Management
- Material Management
- In-field App
- Customer Service & After Care

## FLEX

- Consumer devices to infrastructure
- Asset Management
- Asset Control & Dispatch
- Real-time Alerting
- Asset & Portfolio Optimization
- Asset Reporting & Analytics

## GRID

- LV Network monitoring
- Fault detection
- Transformer asset aging
- Power quality monitoring



## Utilities supported



Electricity



Gas



Water



Wastewater

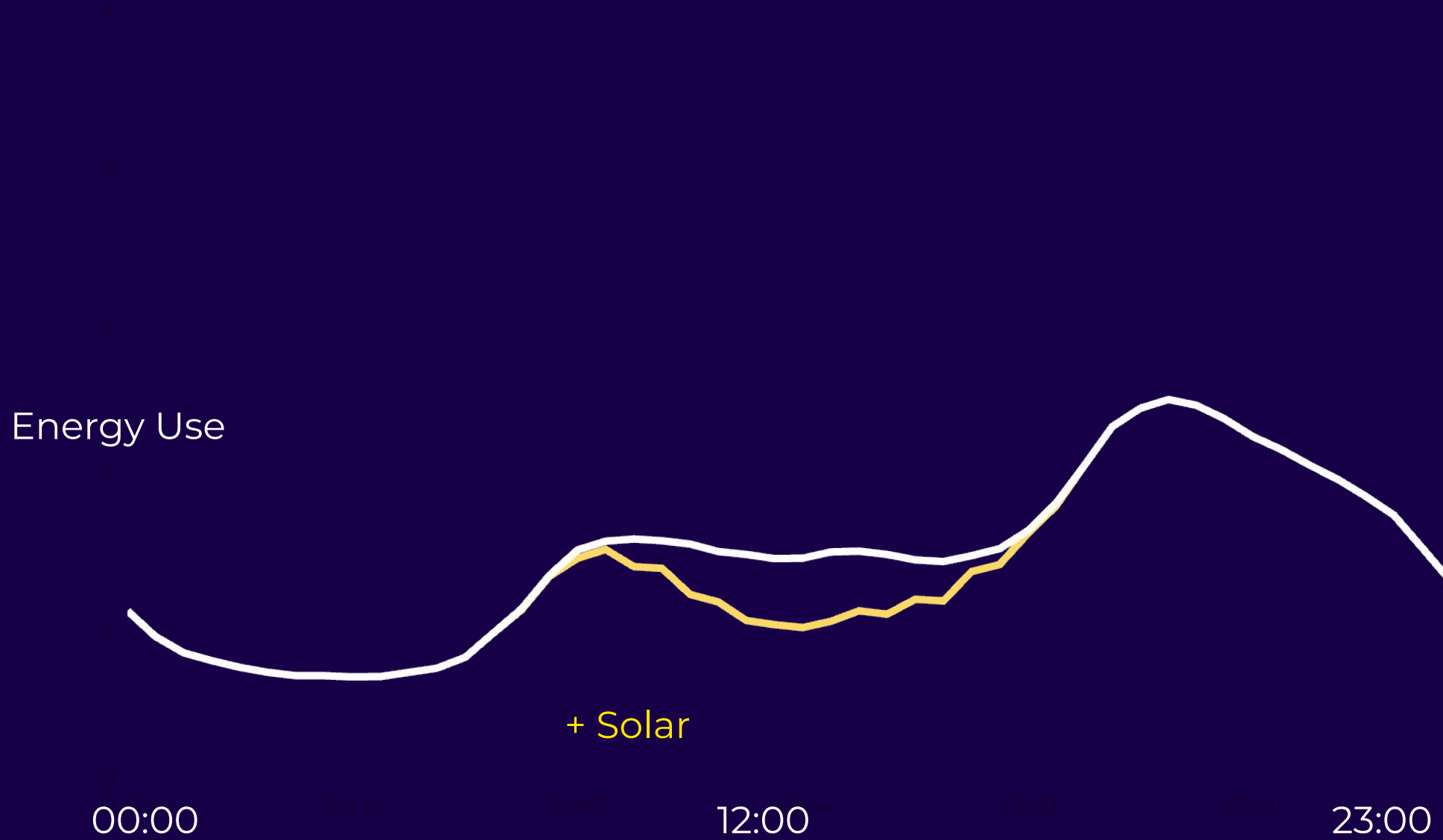


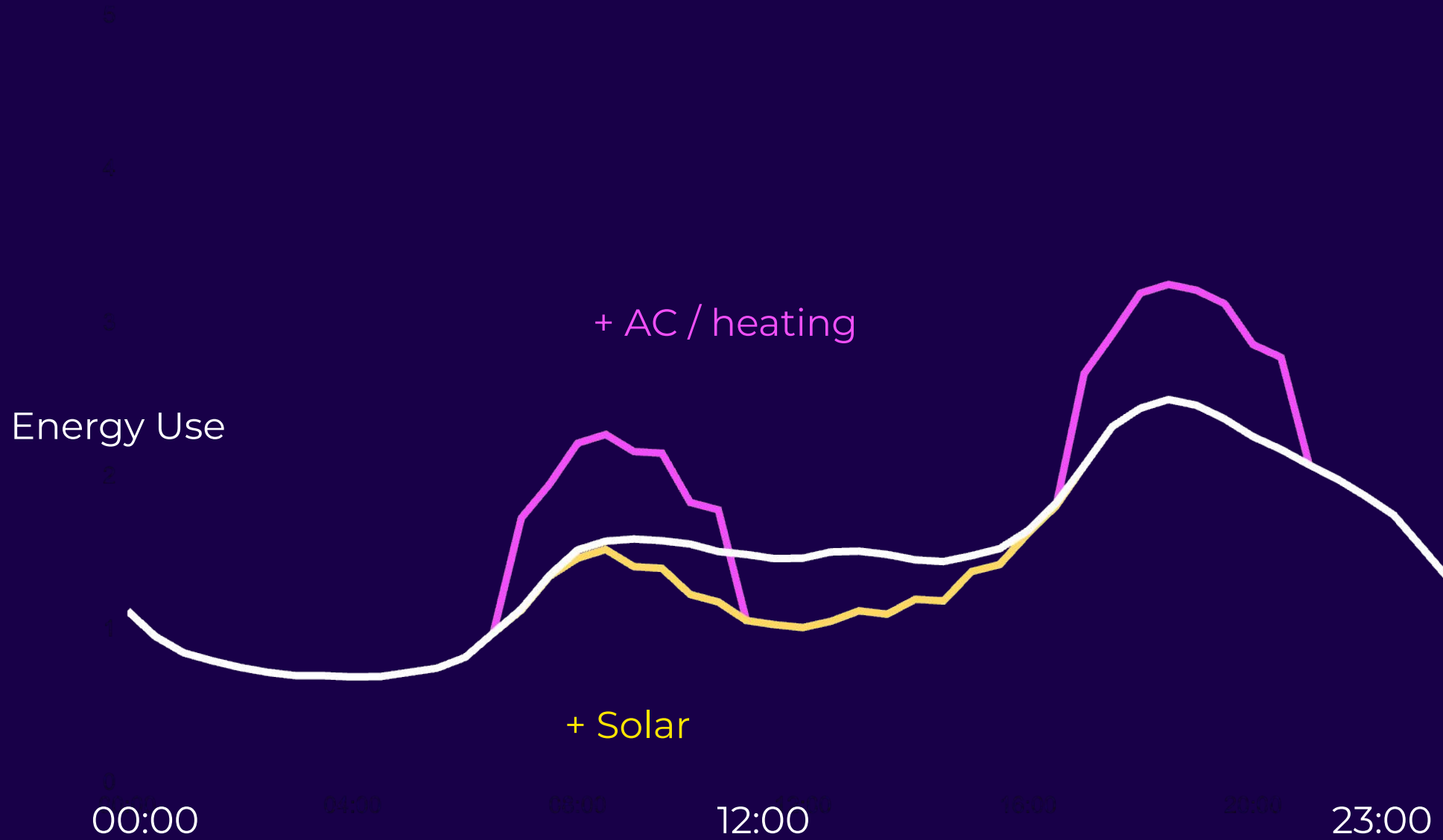
Fiber

# Agenda

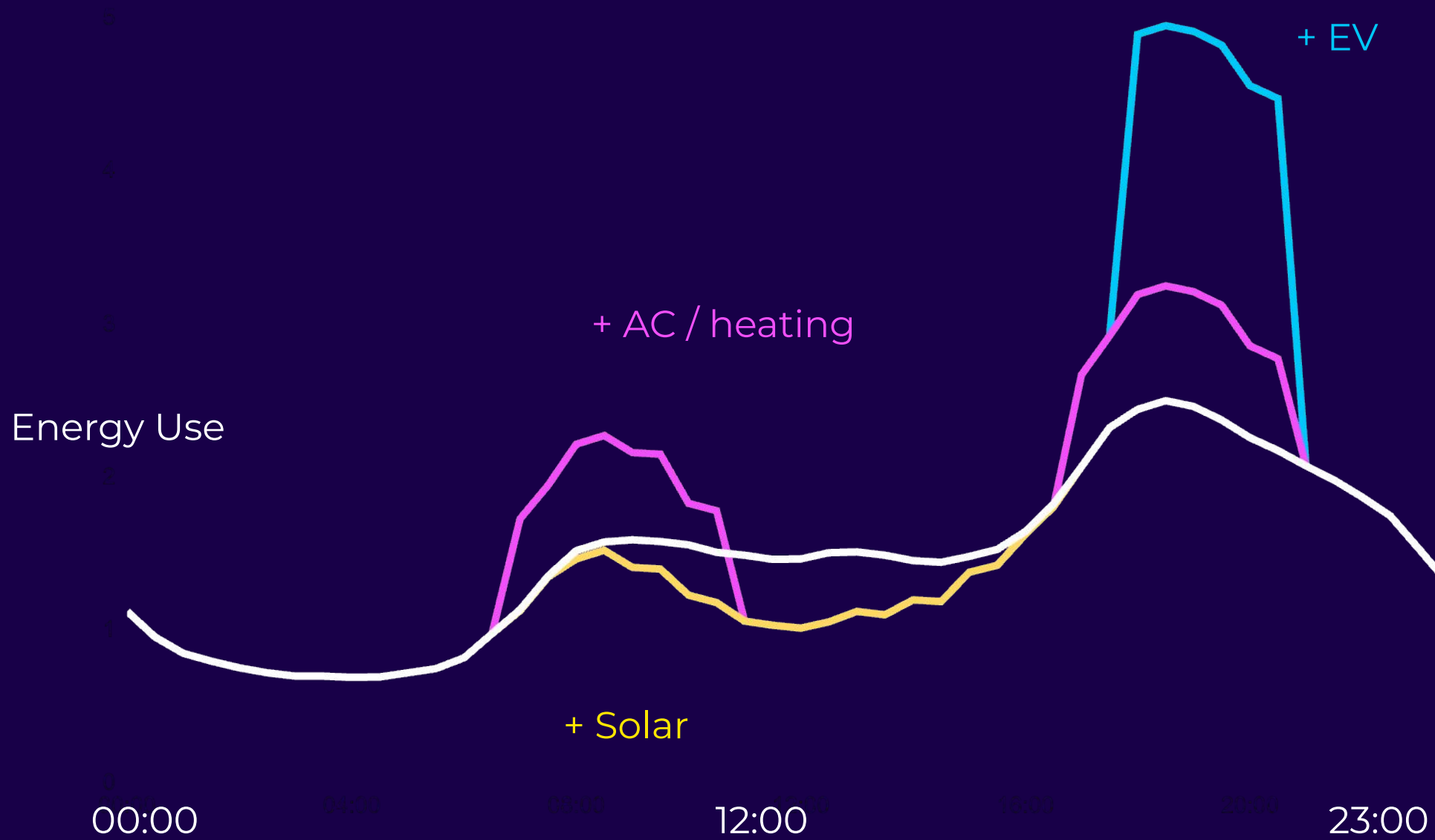
- Introductions
- Overview of the Octopus Energy Group
- **Intelligent Octopus**
  - Context
  - Unlocking consumer flexibility
  - Optimisation

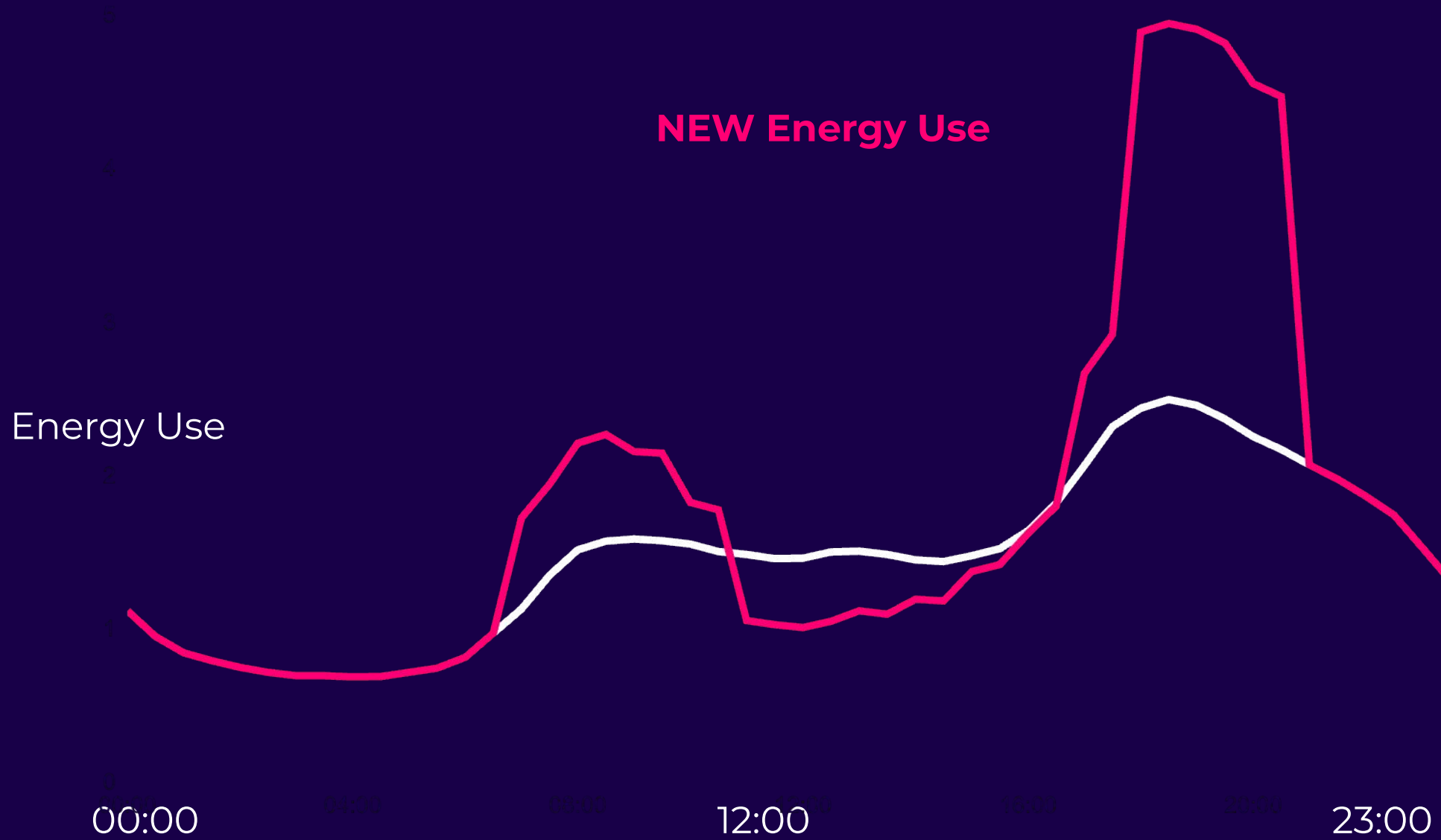
The energy system is  
changing because  
customers are changing











**The problem:**  
unmanaged load puts  
pressure on networks,  
costs and customers

# The transition is underway

2023-30  
device growth



8x

5x

6x

5x

9x

7x

4x

8x



7x

7x

5x

5x

2x

4x

15x

7x



2x

3x

2x

2x

2x

2x

4x

2x

2023

2030

2023

2030

2023

2030

2023

2030

2023

2030

2023

2030

2023

2030

2023

2030

The opportunity:  
dispatchable  
demand

# Three flavours of activating consumer flex

Tariff-led



Time of use  
tariffs (e.g.  
Agile, Go)

Campaigns



Saving  
Sessions,  
Power Ups

Automated

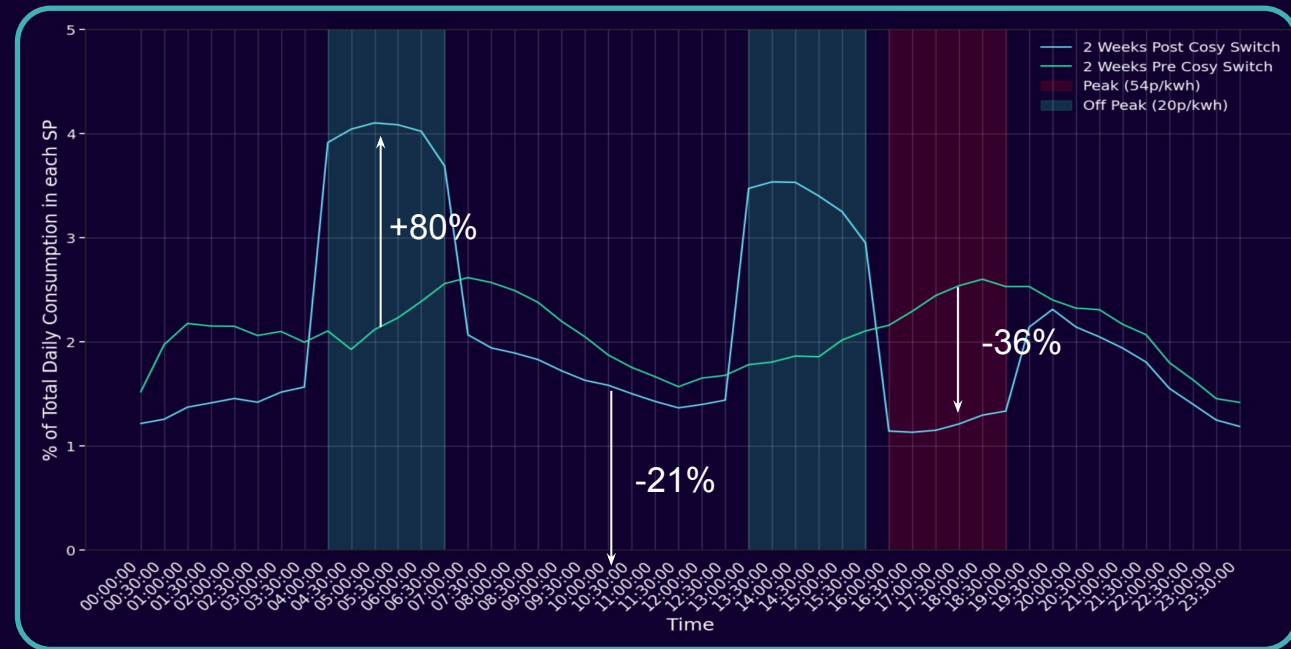
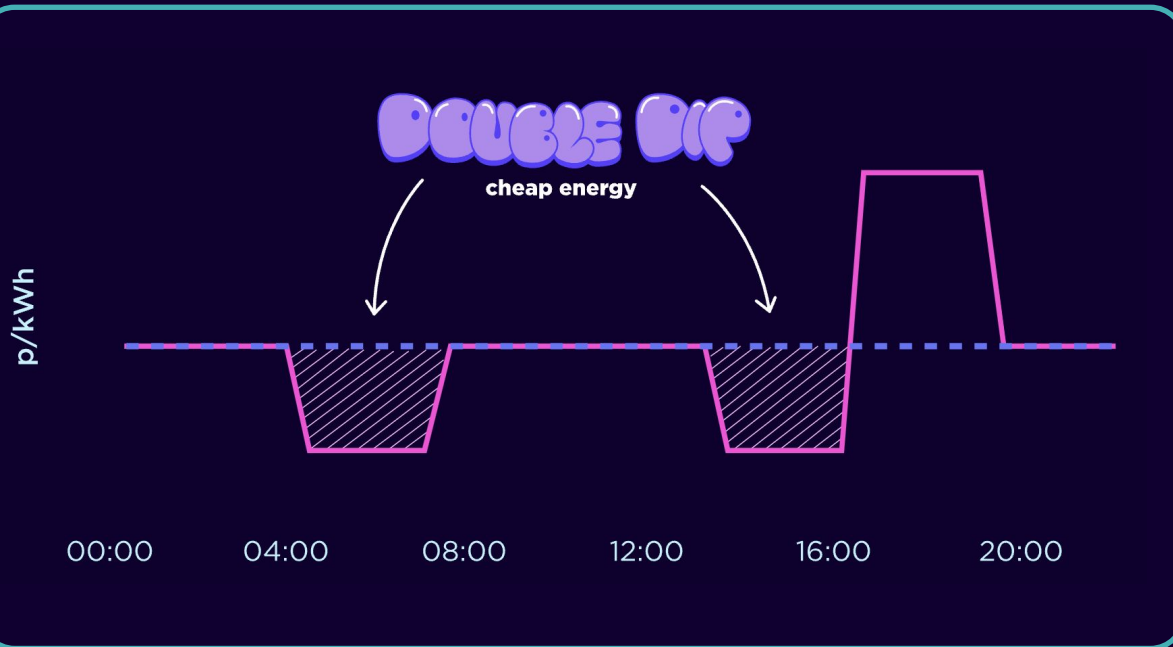


Intelligent  
Octopus



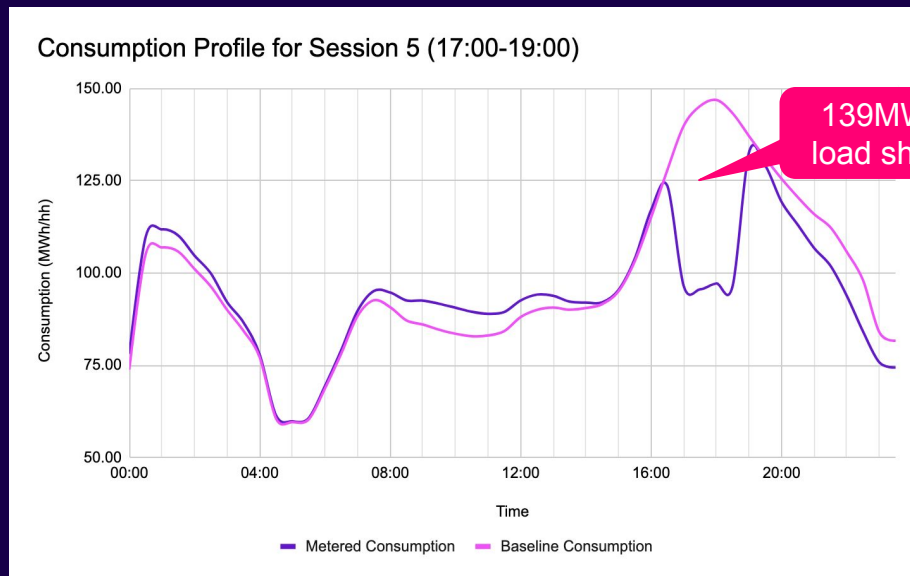
# Tariff-led | Shaping demand for customer and grid benefit

Our **Cosy Octopus** heat pump tariff customers are showing an **incredible ability to shift** demand, 45% of total demand moved into target periods without impacting >3 COP



# Campaigns | Savings Sessions

- New ESO Demand Flexibility Service built from successful ESO / OE trials to manage reserve scarcity. Displaces coal and gas on tight days.
- This winter saw 1.2 million Octopus customers shift >2 GWh of electricity (>50% of DFS volume.)



Menu

octopusenergy

Log out

SAVING SESSIONS

00 08 21 06  
DAYS HRS MINS SECS

The next Saving Session:

Today for 1 hour between 17:30 - 18:30 GMT

Earn 1800 OctoPoints - worth £2.25 - for every unit of power you cut down Ⓢ

Opt in now to earn rewards

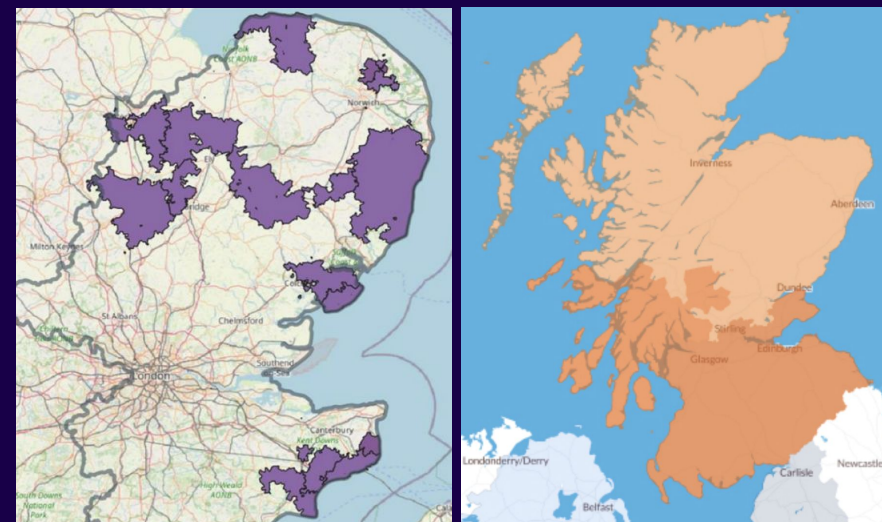
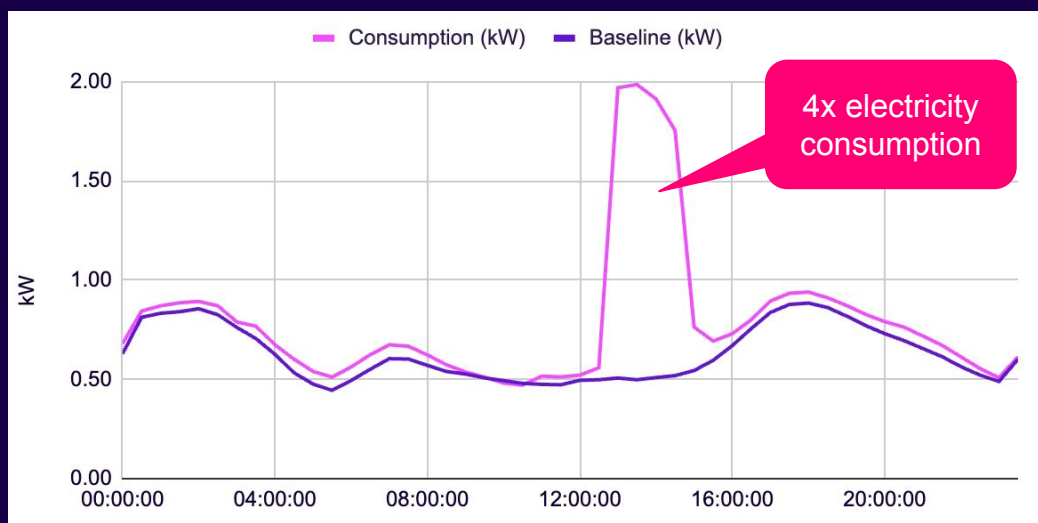
You've opted in

# Campaigns | Power-ups

Power-ups reduces renewable curtailment instead customers, in the right area, are able to use it.

Highly successful:

- Customers notified at day ahead stage of events
- 25,000 customers signed up, ~80% opt in to events
- 1-1.5kW increase per customer during events
- Schemes with UKPN (free electricity) & ESO (50% off)



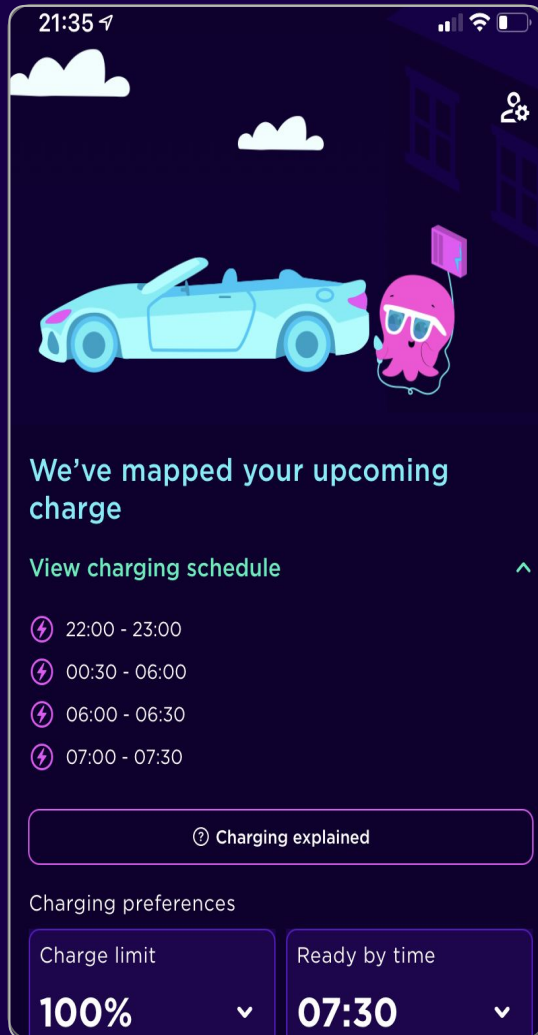
Left, areas where Power-ups were launched initially.

These are zones with the UKPN distribution network which regularly experience renewable surplus.

Power-ups has also expanded to Scotland via the ESO Local Constraint Market.

# Automation | Intelligent Octopus

EV smart charging



Home battery



Heating & hot water





# Full app-based customer experience

## Select the device you would like to integrate with

If you have multiple devices, just pick one.

Intelligent Octopus may only be able to connect to certain models.



Electric Vehicles



Chargers



Heat pumps



Thermostats



Hi Harry,

Let's get you set up



Car

Tesla



Model

Model 3 Standard Range +



Charger

Generic



Model

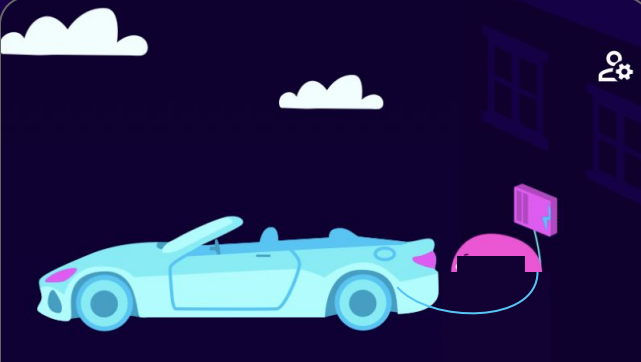
7kW



Authenticate device



Test charger connection



### We've mapped your upcoming charge

[View charging schedule](#)

- ⚡ 22:00 - 23:00
- ⚡ 00:30 - 06:00
- ⚡ 06:00 - 06:30
- ⚡ 07:00 - 07:30

[ⓘ Charging explained](#)

Charging preferences

Charge limit

**100%** ▾

Ready by time

**07:30** ▾

Need to charge now? [Bump Charge](#)

Charging history

# Intelligent Octopus | Benefit to consumers

Standard rate

£0.26  
per kWh

Smart charging rate

£0.075  
per kWh



KRAKEN

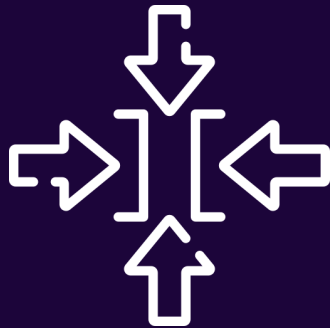


# Optimisation | Intro to optimisation

**Forecast  
inputs**



**Set  
parameters**



**Calculate  
optimal  
behaviour**



**Execute  
instructions**



# Optimisation | User behaviour and market factors

## Consumer behaviour factors

Plug in / out  
time



SoC at  
plug-in



Charging  
miles



SoC Preferences  
(min/max)



Boost  
charging



## Market factors

Asset  
location



Market  
prices



Standards  
(e.g. metering)



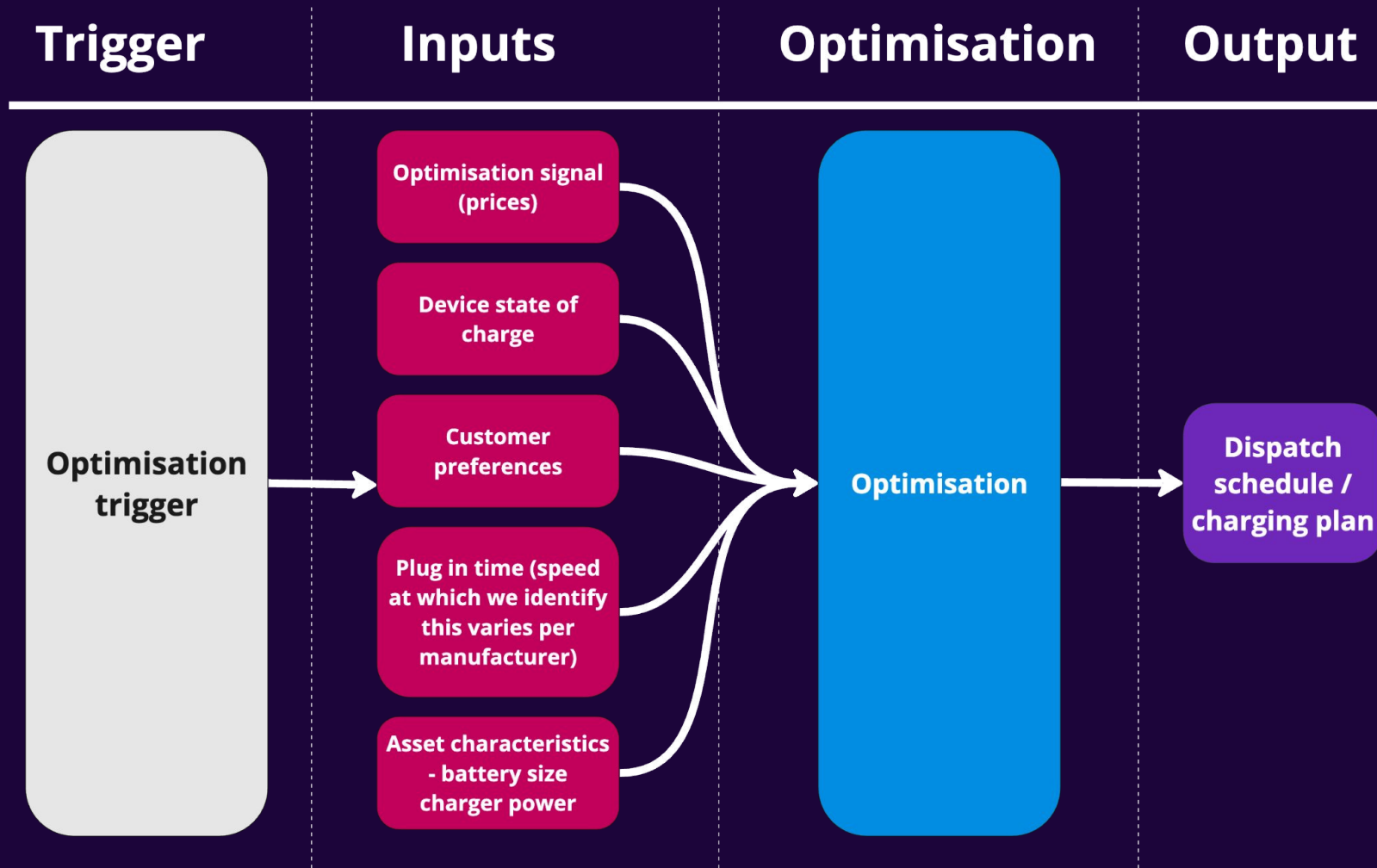
System  
Operators



Taxes



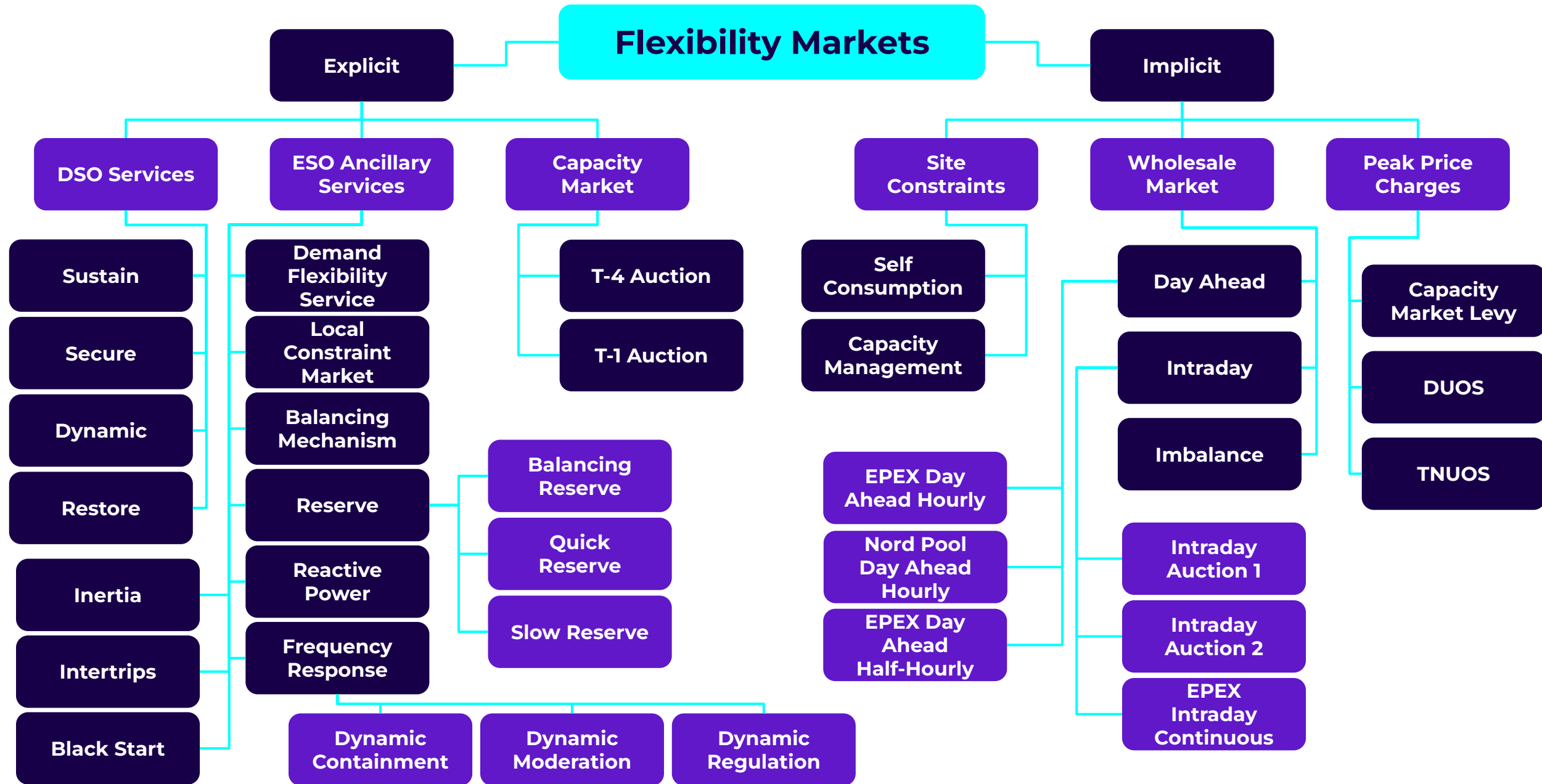
# Optimisation | Dynamic optimisation for customer & grid needs



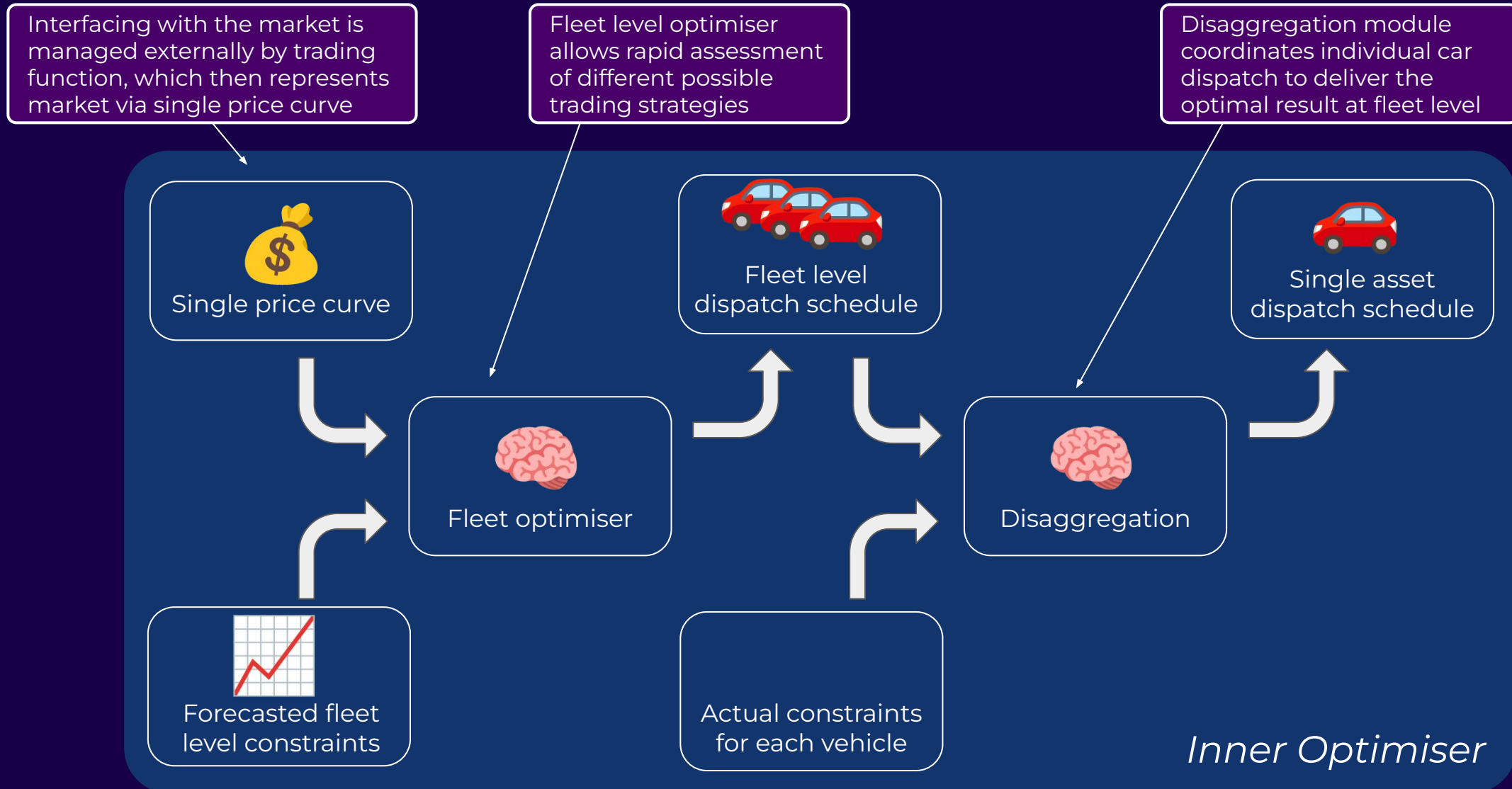
Principle: customer requirements are 👑

User preferences (ready by time and state of charge) will always be respected as a priority over the relative cost of energy (prices).

# Optimisation | In a complex market landscape

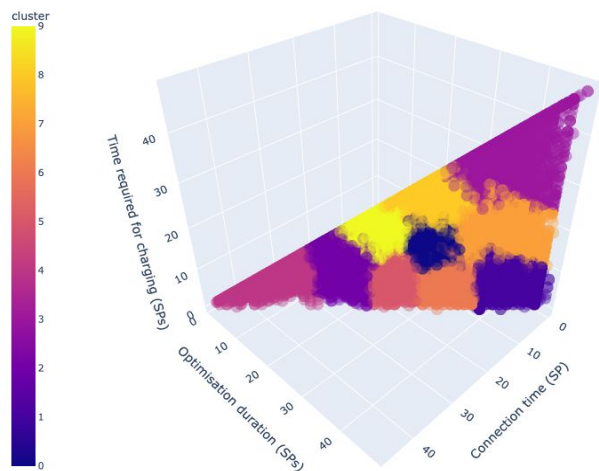


# Optimisation | Fleet Level Optimisation

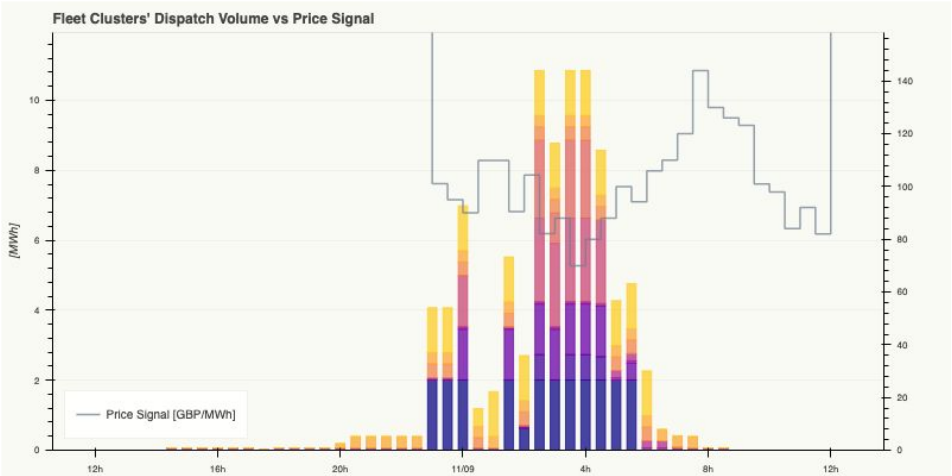


# Optimisation | Unlocking Advanced Control

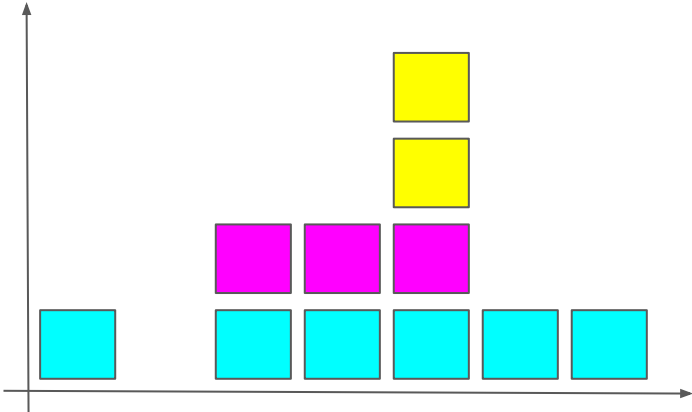
## Forecasting



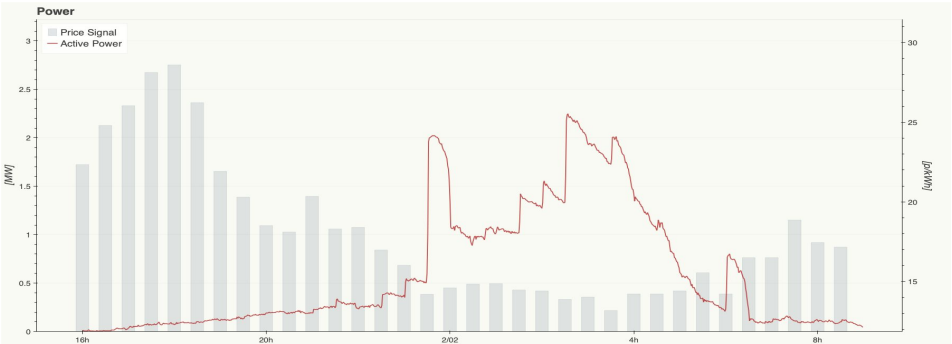
## Optimisation



## Disaggregation



## Reporting & Analytics





# Optimisation | Driving customer behaviour on top of automation

Nudges to encourage EV drivers to plug in on days with high renewable output. Very positive response from customers when choice is made simple

Reduced  
carbon by

6%

Here's how it looks today:



How the rest of the week is shaping up...



Reduced  
energy costs  
by

14%

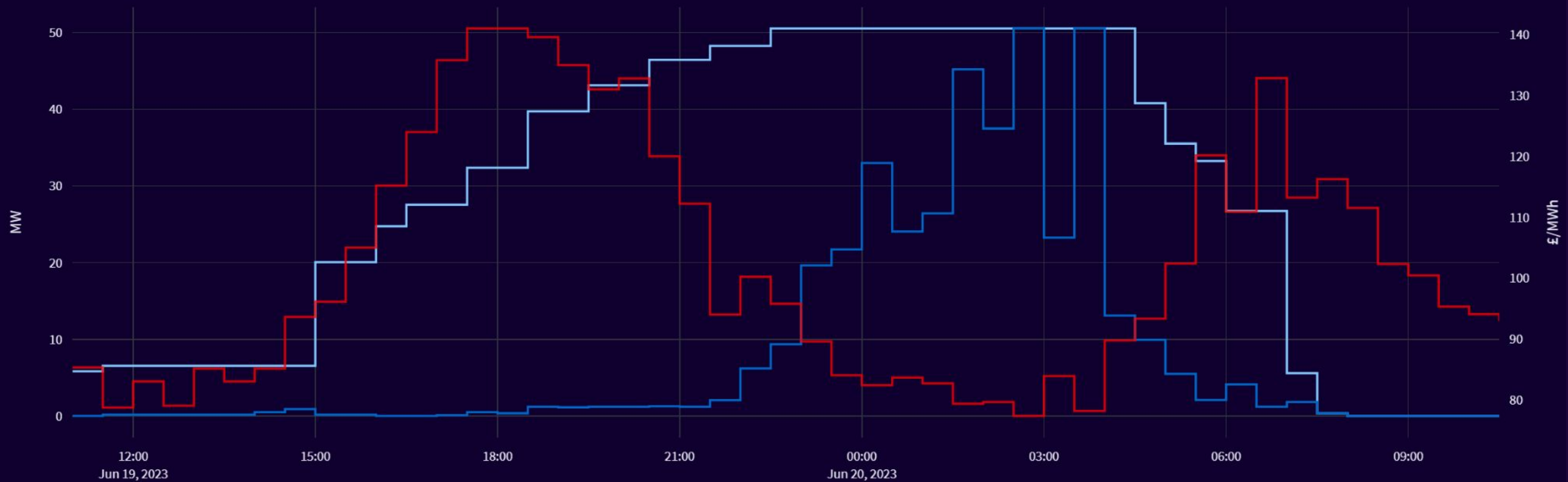
# Optimisation | EV optimisation example

## Maximum and optimal charging profile for a day

Select Optimization Date

2023-06-19

☒ Show Price



# We have had a good start...

IO device growth

125,000

125,000 devices

100,000

75,000

50,000

25,000

0

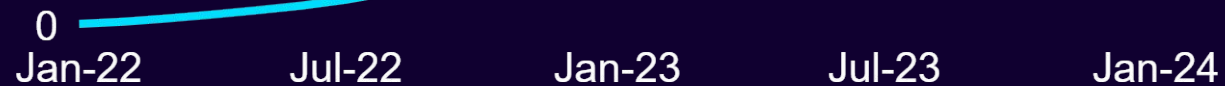
Jan-22

Jul-22

Jan-23

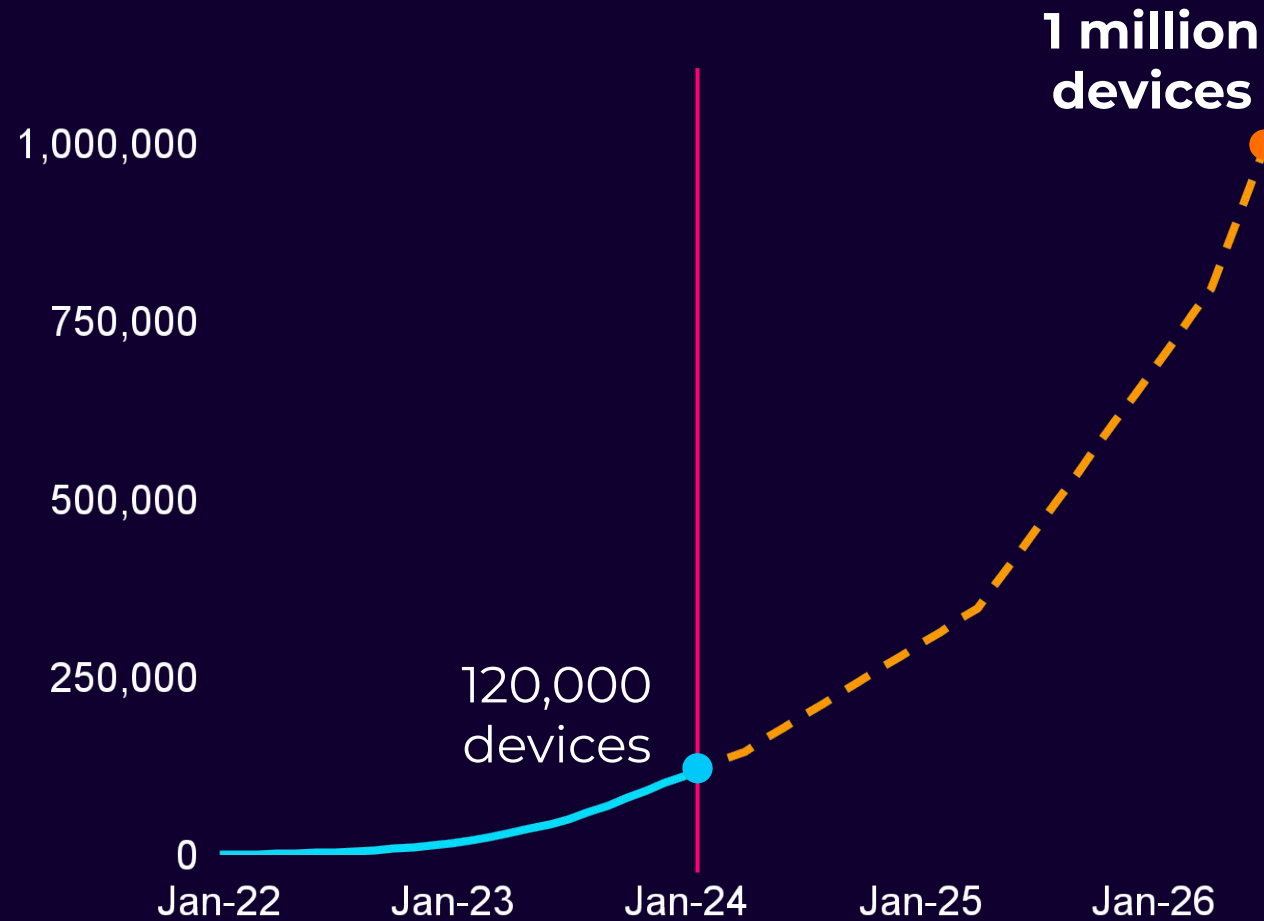
Jul-23

Jan-24



# ... but we're just getting started

IO device forecast



**THANK YOU**