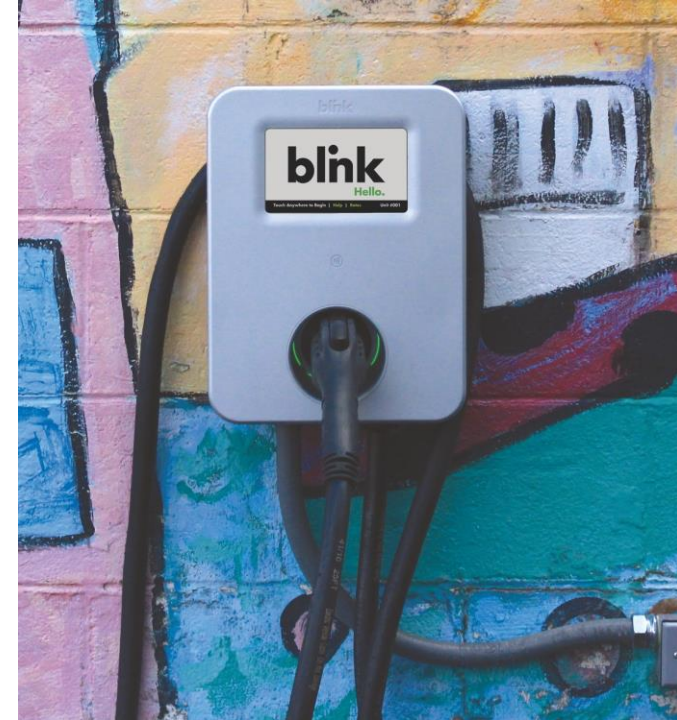


Project HUME: mobiliteitshub als cornerstone in de energietransitie

Sam De Frene

blink[®]





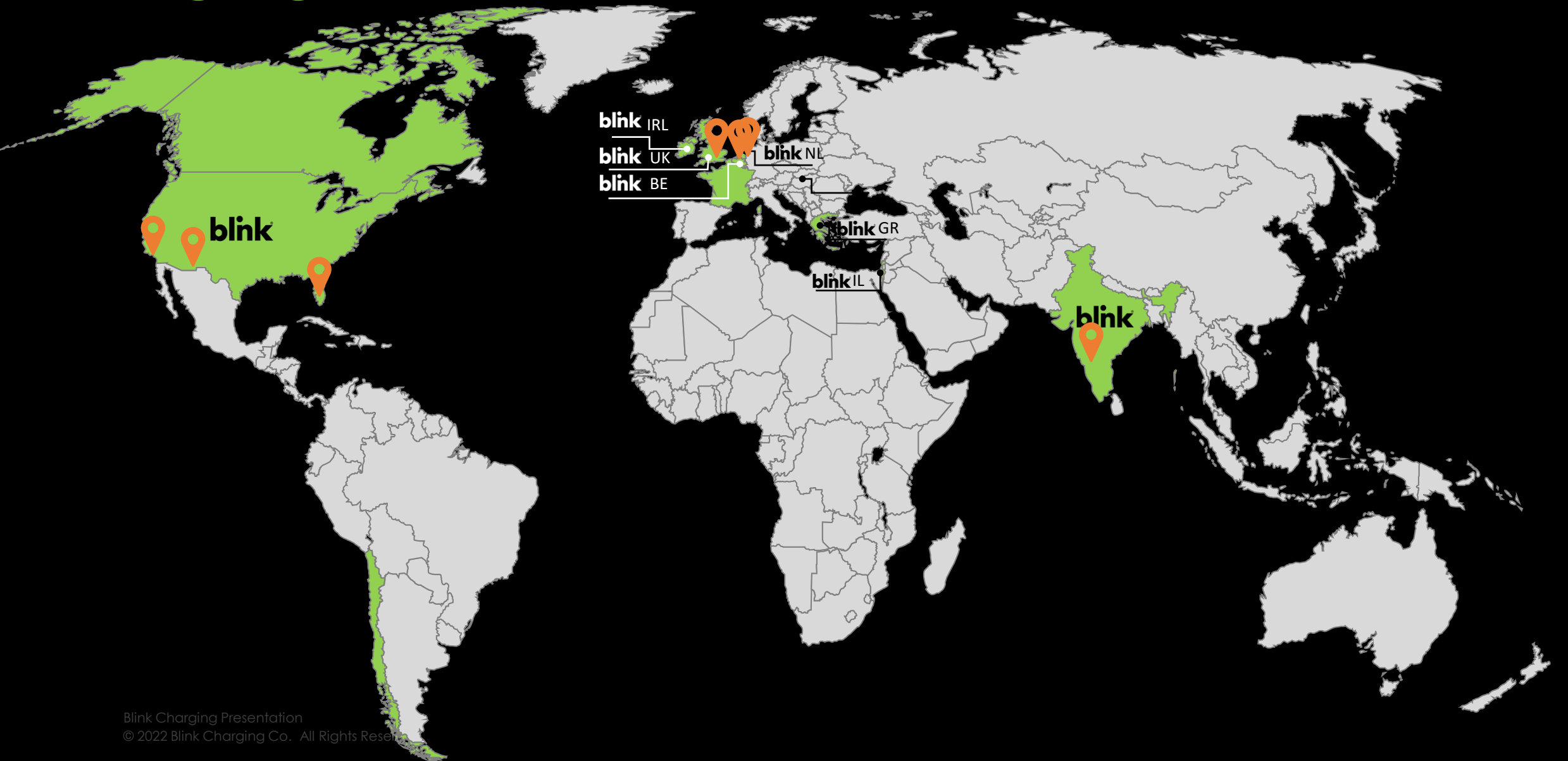
bluecorner[®]
building a blue world

| A Blink Charging Company

R IS NOW

blink

Blink Charging Belgium in the Global Blink Charging Group



Q3 2023 Highlights

By the Numbers



Revenue
\$43.4 MILLION
Increase 152%



Product Sales
\$35.1 MILLION
Increase 162%



Gigawatts Dispersed
16.2



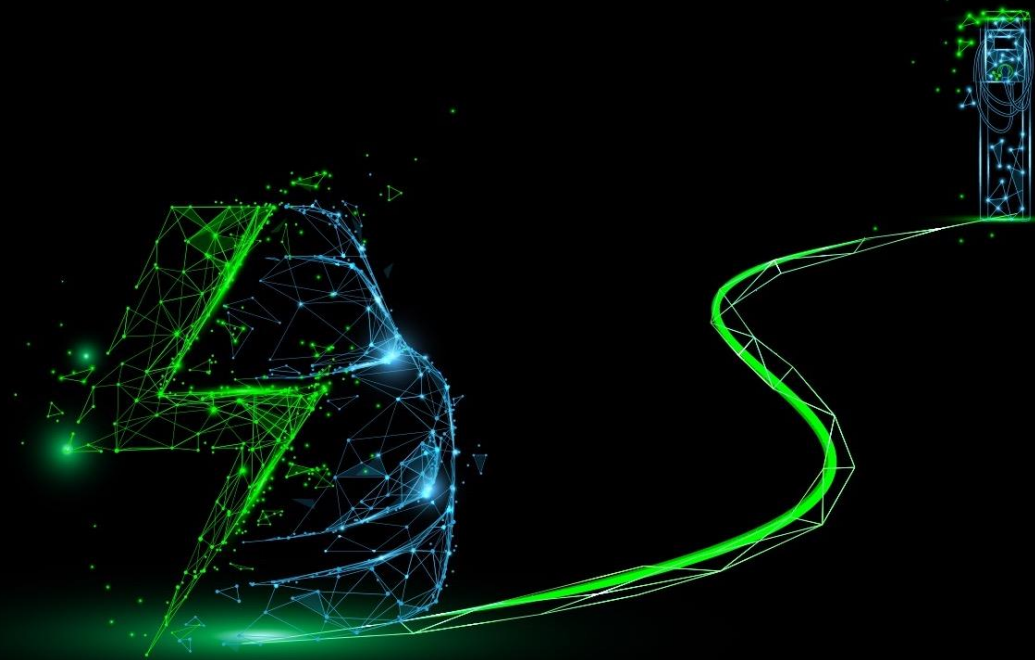
Current Active Members
455K



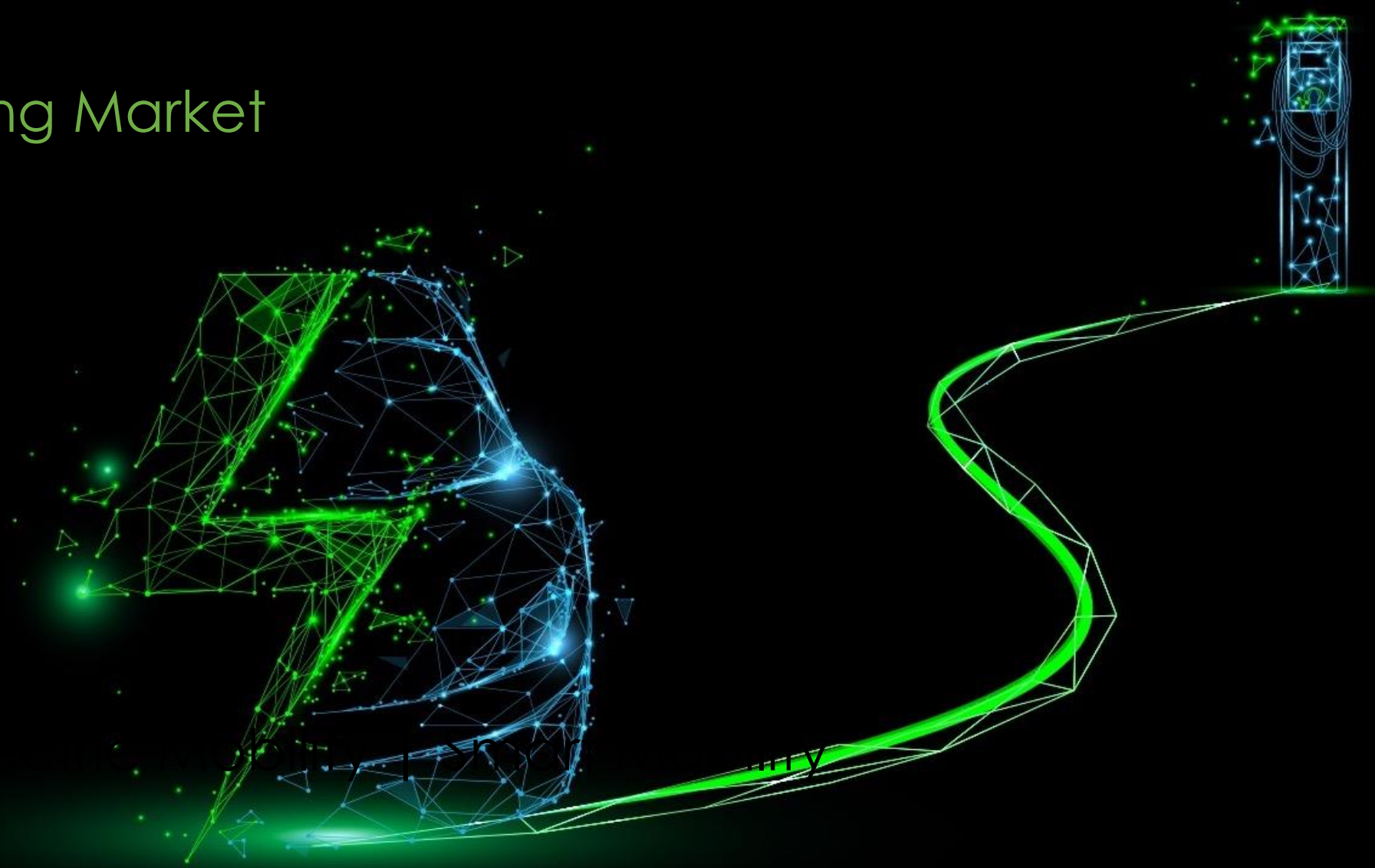
Chargers Contracted, Deployed or Sold
5,956
Nearly 85,000 to date



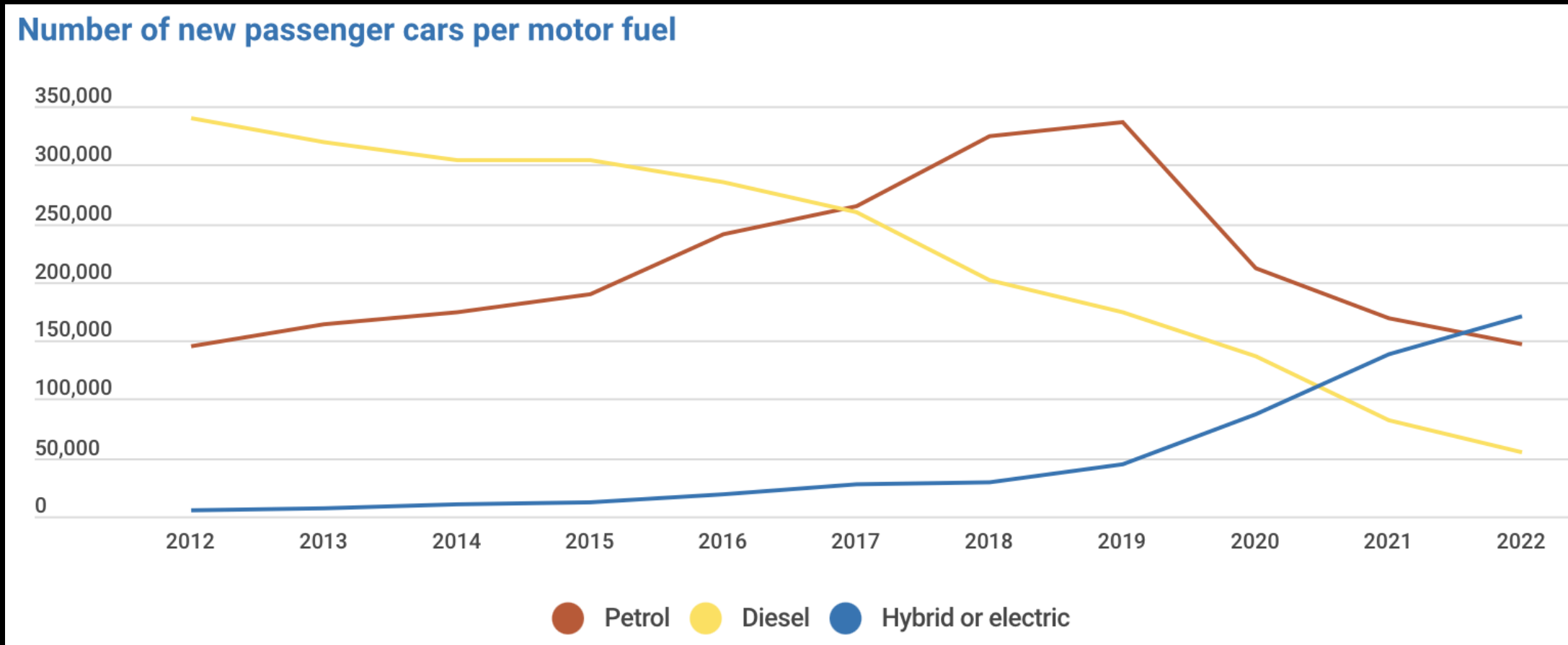
Increased Revenue Target
\$128-\$133 MILLION
Up from \$110 to \$120 million



Public Charging Market



Evolution of EV's in Belgium



Source: Statbel

The transition is moving fast...



27 februari 2023

100.000ste batterij-elektrische wagen op de Belgische weg is een feit

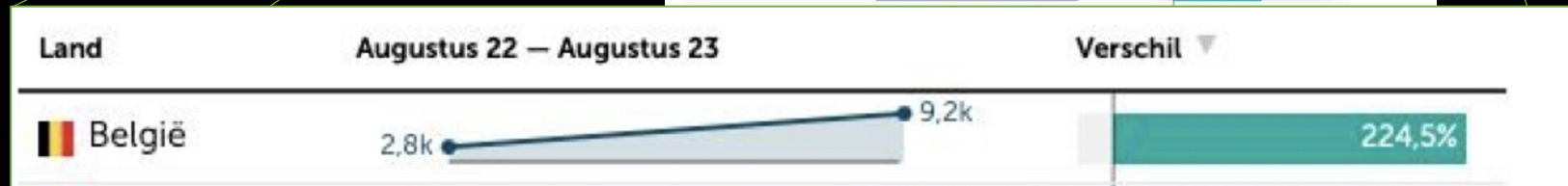
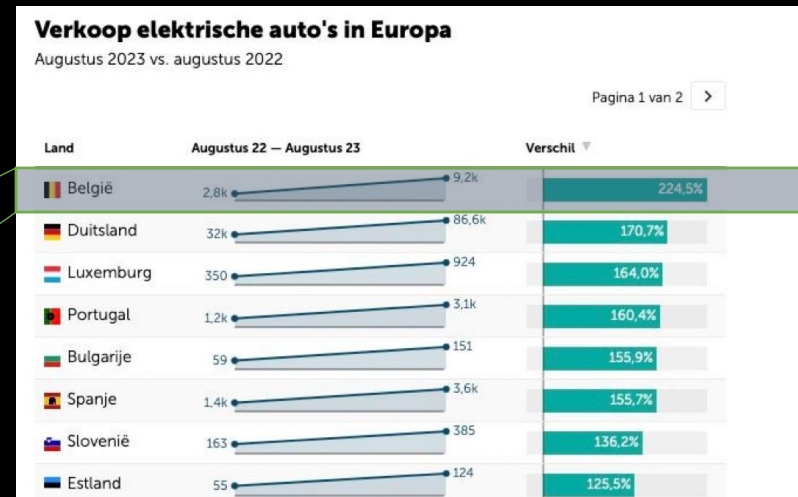
In februari 2023 werd de 100.000^{ste} volledig elektrische wagen ingeschre-

...and accelerates every day.

• Increase of EV's immense

• Belgium

- 9200 EV's sold in August
- Same amount of NL
- 224% growth YoY



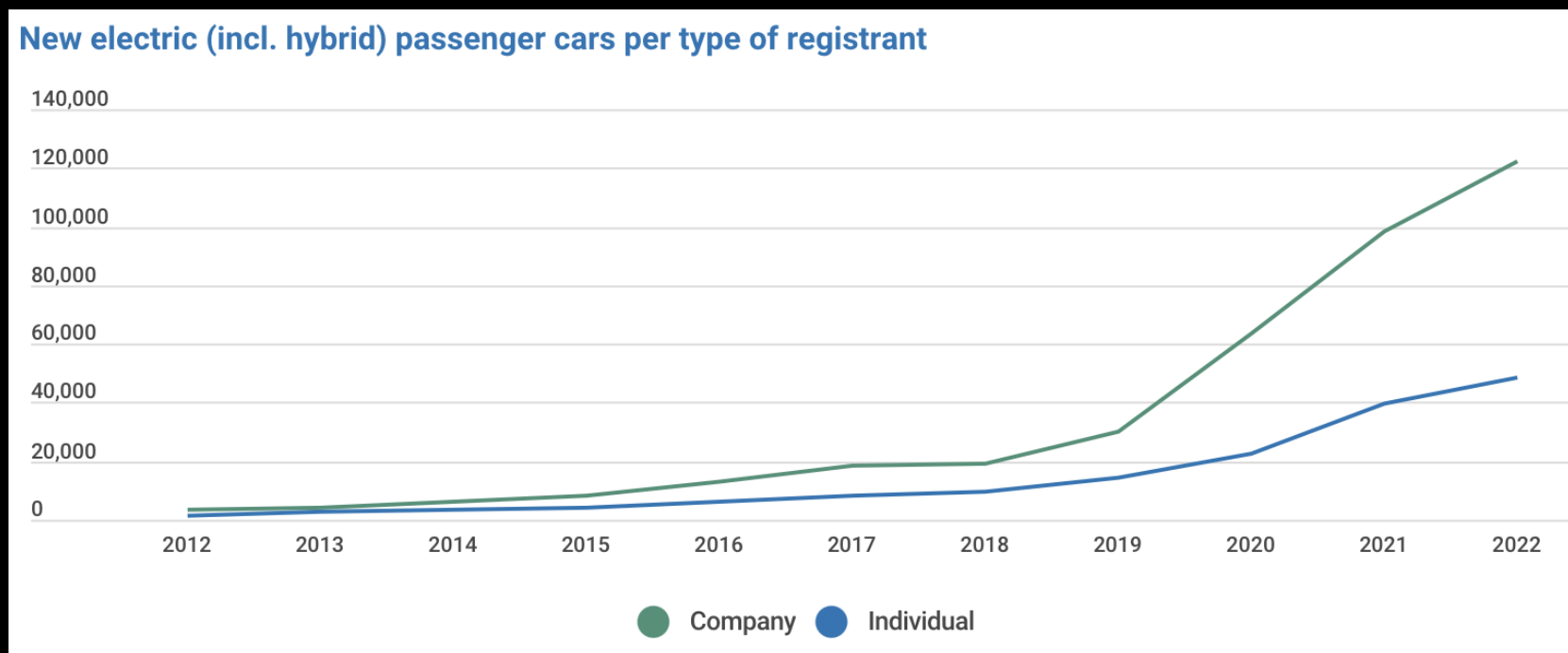
• Top 3

1. Germany: 86.6K
2. France: 19,7K
3. Netherlands and Belgium: 9,2K



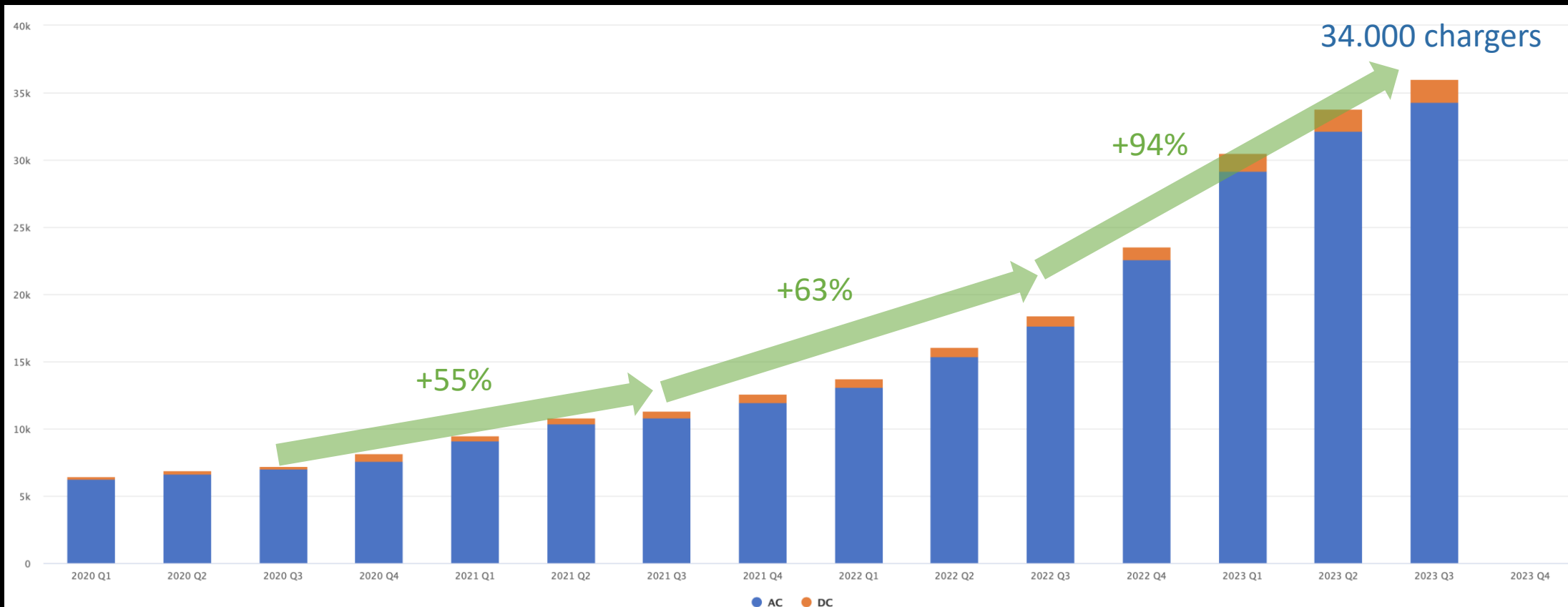
Company Cars Only?

- **Belgium: new Hybrid and Electric Cars in 2022**
 - 71% registered by enterprises
 - 29% registered by individuals



Source: Statbel

AC and DC Chargers in Belgium



Will there be enough
Energy? Grid

Where will we
charge all these

What is the best
charging strategy?

How to reduce
the charging



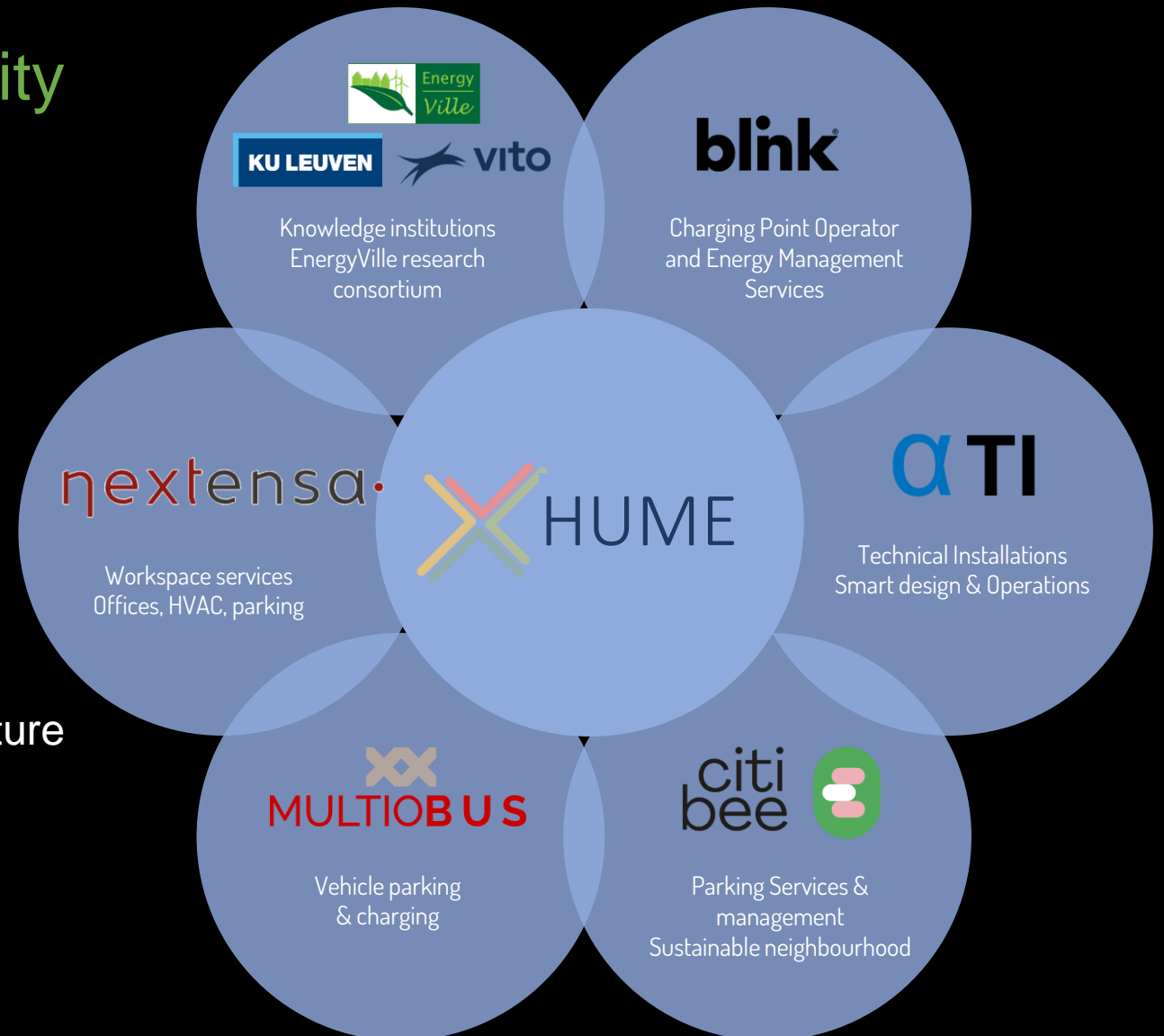
HUME: Hubs for Urban Mobility and Renewable Energy

Why: Building the solutions of tomorrow

What: Smart charging strategies for diverse mobility and energy needs (at location, building and grid levels)

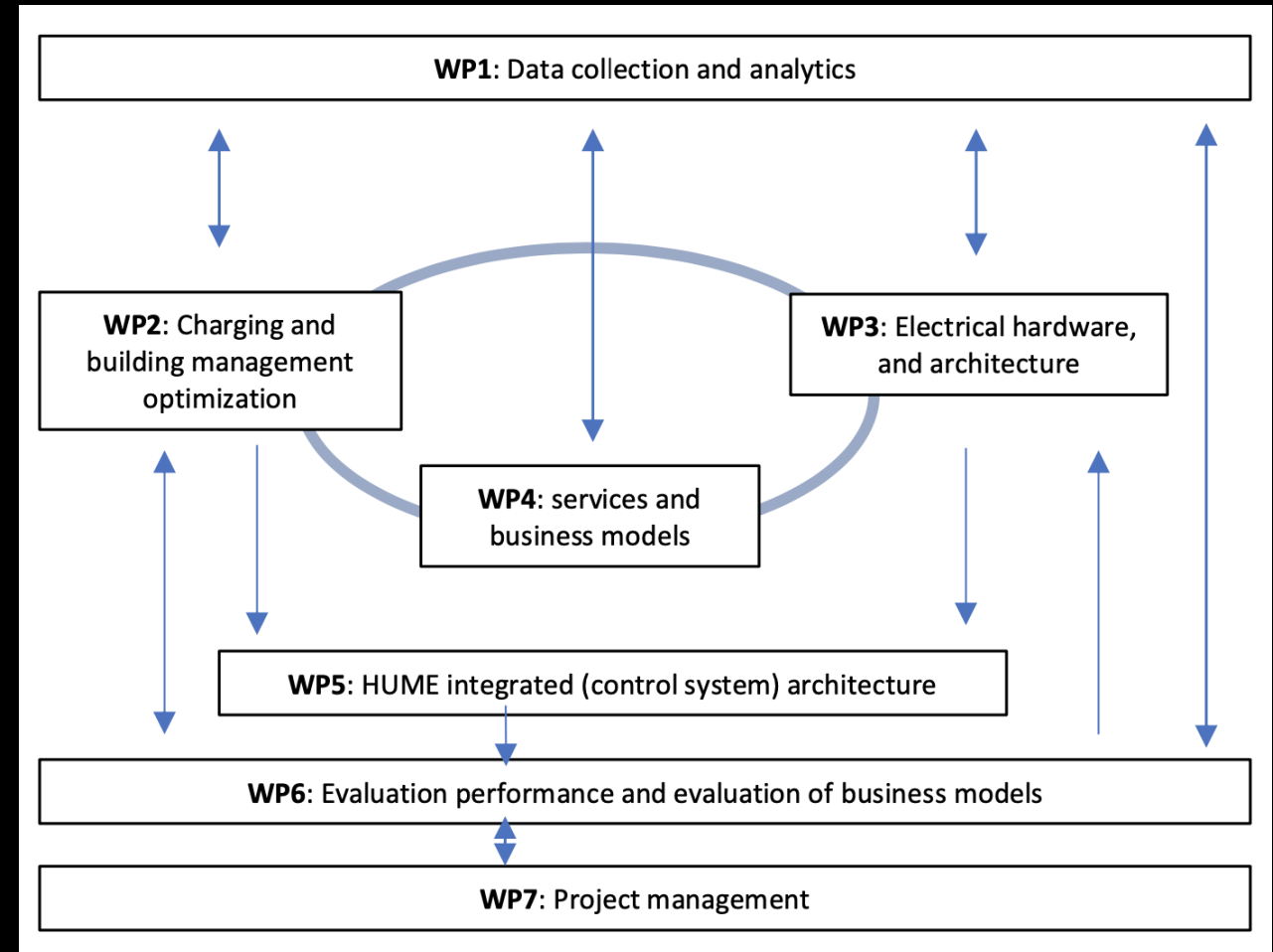
How: Multi-technology with integrated architecture

- AC/DC Chargers, fast charging
- E-bus & e-bike charging
- User preferences
- Vehicle-to-grid (V2G)
- Low-voltage DC microgrid (LVDC)



Work packages

- **WP1: Data collection and analysis**
- **WP2: Charging and building management Optimization**
- **WP3: Electrical Hardware and Architecture**
- **WP4: Services and business models**
- **WP5: HUME integrated control system architecture**
- **WP6: Evaluation**



Flexibility in charging is more than technology

Understanding the EV Charging Ecosystem



Technology



People



Business Models

Charging

Where will we charge in the future?



Cities have their Plans...

Oslo bant auto's uit centrum hoofdstad

19 oktober 2015 19:29

In het centrum van de Noorse hoofdstad Oslo zijn vanaf 2019 geen wagens meer toegelaten. De overheid wil zo de uitstoot van broeikasgassen met de helft verminderen, aldus de Arbeiderspartij, de Linkse Socialistische Partij en de Groenen, die na de verkiezingen van 14 september Oslo zullen leiden. In de zone die autovrij wordt, woont slechts een duizendtal mensen, maar werken wel ongeveer 90.000 anderen. Het is nog niet bekend welke voorwaarden zullen gelden in de zone, maar de handelaars in de winkelcentra in het centrum van de stad vrezen voor minder inkomsten.

Gent, ineens een voetgangers-oase maar nog wel met kinderziekten

Van de ene dag op de andere is Gent totaal veranderd. Waar eerst de auto regeerde, hebben nu voetgangers en fietsers het voor het zeggen. De ervaringen van het autoluwe Groningen dienden als richtlijn.

Leen Vervaeke 5 april 2017, 02:00

Antwerpen bant straatparkeren voor bezoekers binnenstad: 'Nieuwe parkeerregels zullen stad aangenamer maken'



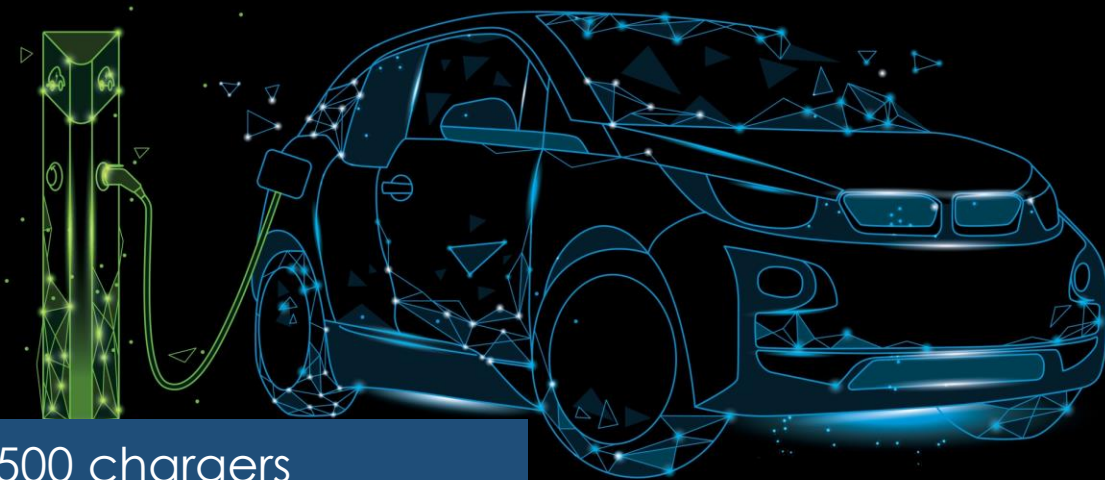
Cities: want to give the streets back to its citizens

Car Ownership: 4 out of 10 citizens own a car

EV: 1 out of 3 cars will be electric in 2030

Target Europe: 1 EV charger per 10 EV's

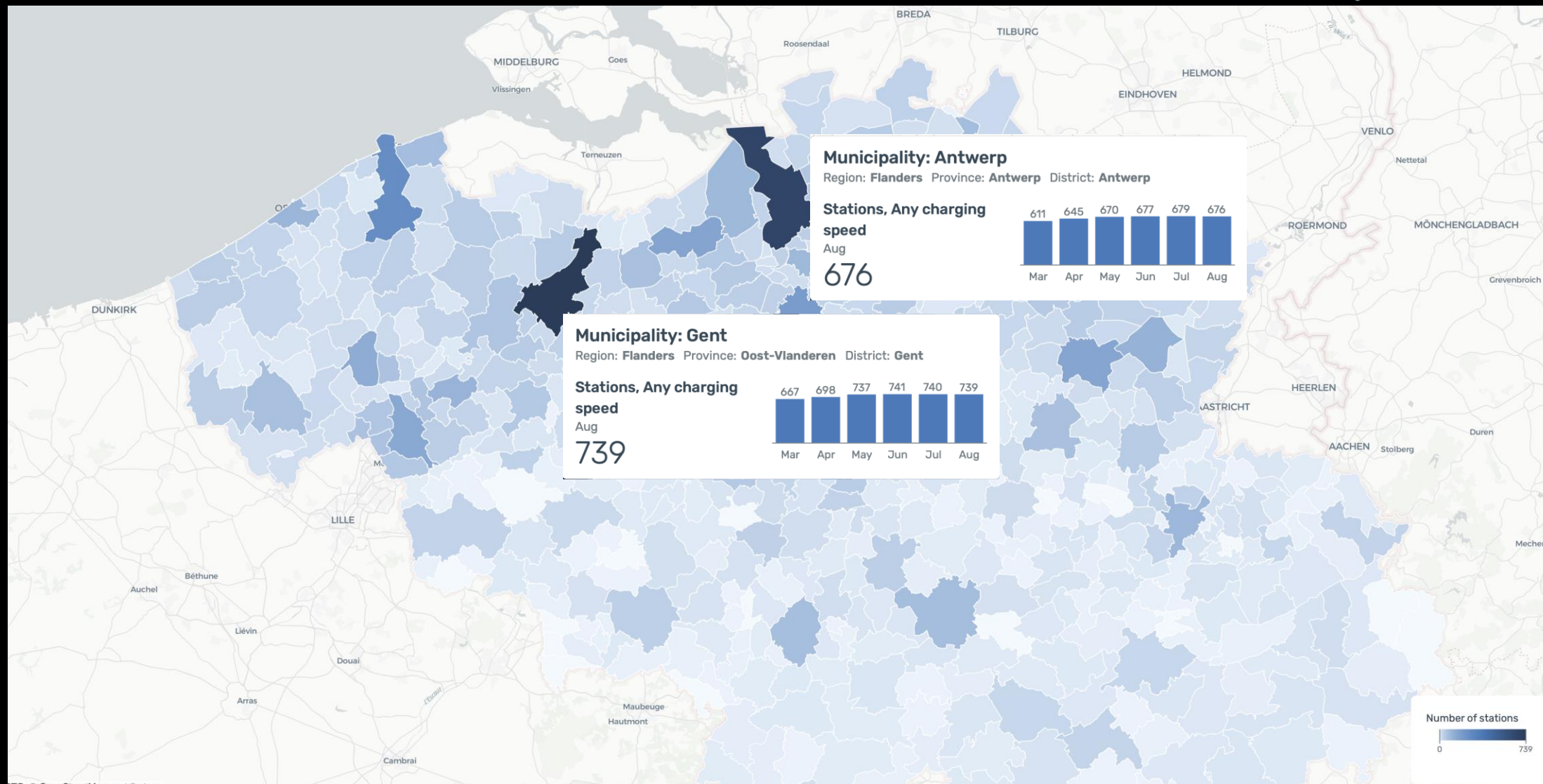
One charger per 75 citizens



Gent: 268.000 citizens → 107.200 cars → 35.700 EV's → 3.500 chargers

Antwerp: 536.000 citizens → 214.000 cars → 71.500 EV's → 7.000 chargers

Public chargers per district (Belgium)



Paal volgt wagen?

Al 1.300 publieke laadpalen aangevraagd. "We zitten op schema"

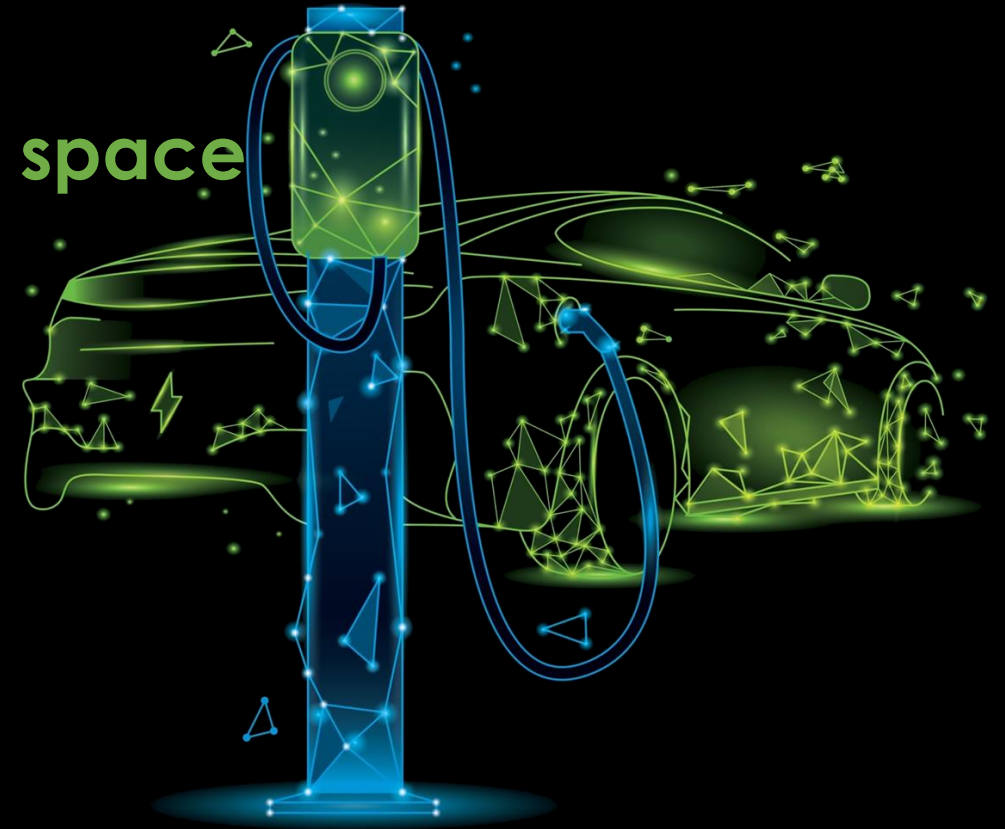
Sinds september 2022 kun je een publieke laadpaal aanvragen in het kader van het "Paal volgt Wagen"-initiatief. Er zijn ondertussen 1.300 aanvragen ontvangen. Volgens Vlaams minister van Mobiliteit Lydia Peeters (Open VLD) loopt alles volgens plan en zit de installatie van laadpalen op schema.

Aanvragen voor "Paal volgt wagen" zijn er genoeg: 1.300 sinds september 2022. Er zijn er ondertussen 46 actief, 165 wachten nog op een aansluiting door Fluvius.

How to get more chargers

...without the need for more public space

1. Shared use of infrastructure
2. Transform private to semi-public
3. Optimized hubs outside city center
4. Innovation

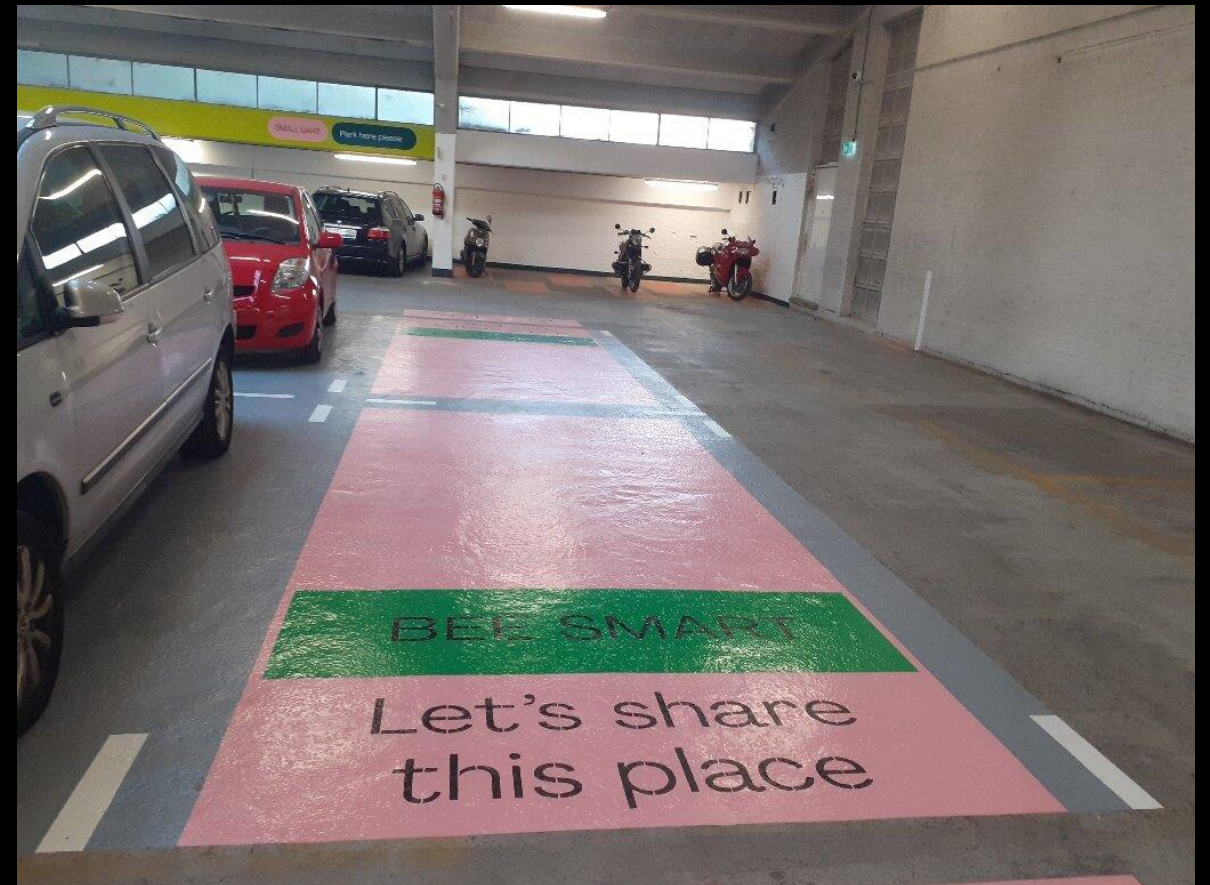


Neighbourhood parkings and association of co-owners

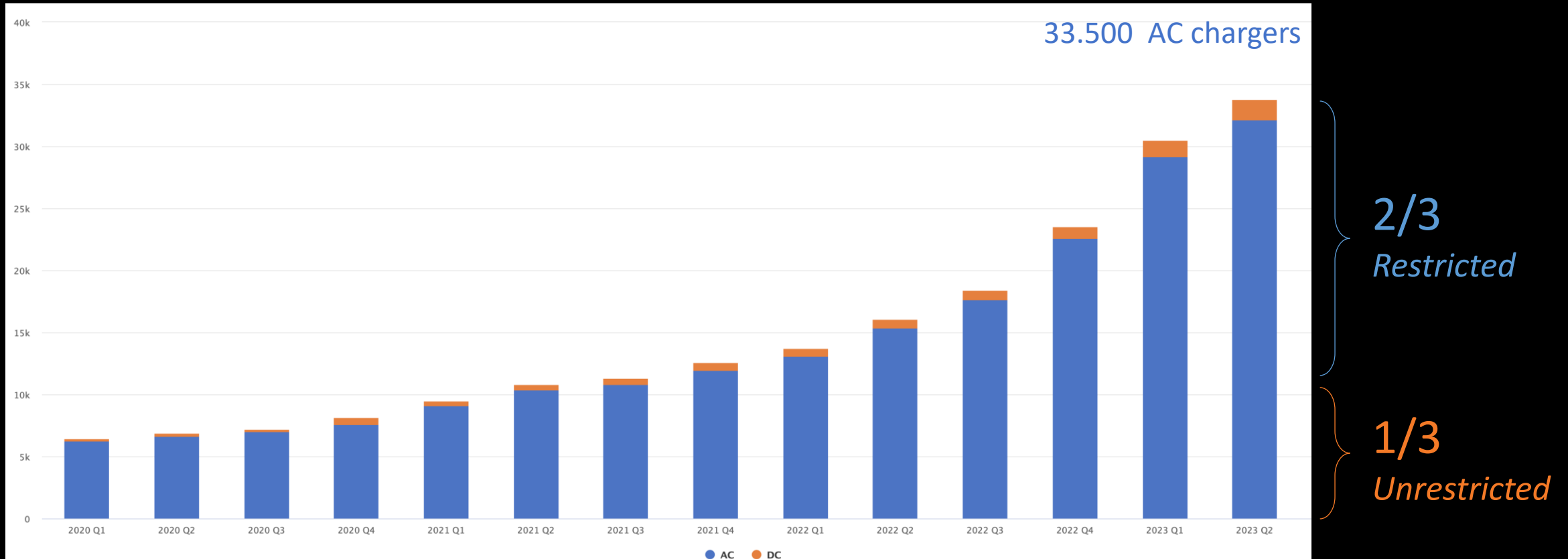


Shared charging...

...and parking



Better access Semi-Public



Source: European Alternative Fuels Observatory

Realize access to semi-public



Better access to semi-public



Optie 3: Optimized Charging Islands



And Modal Shift ... and think out of the box



Charging

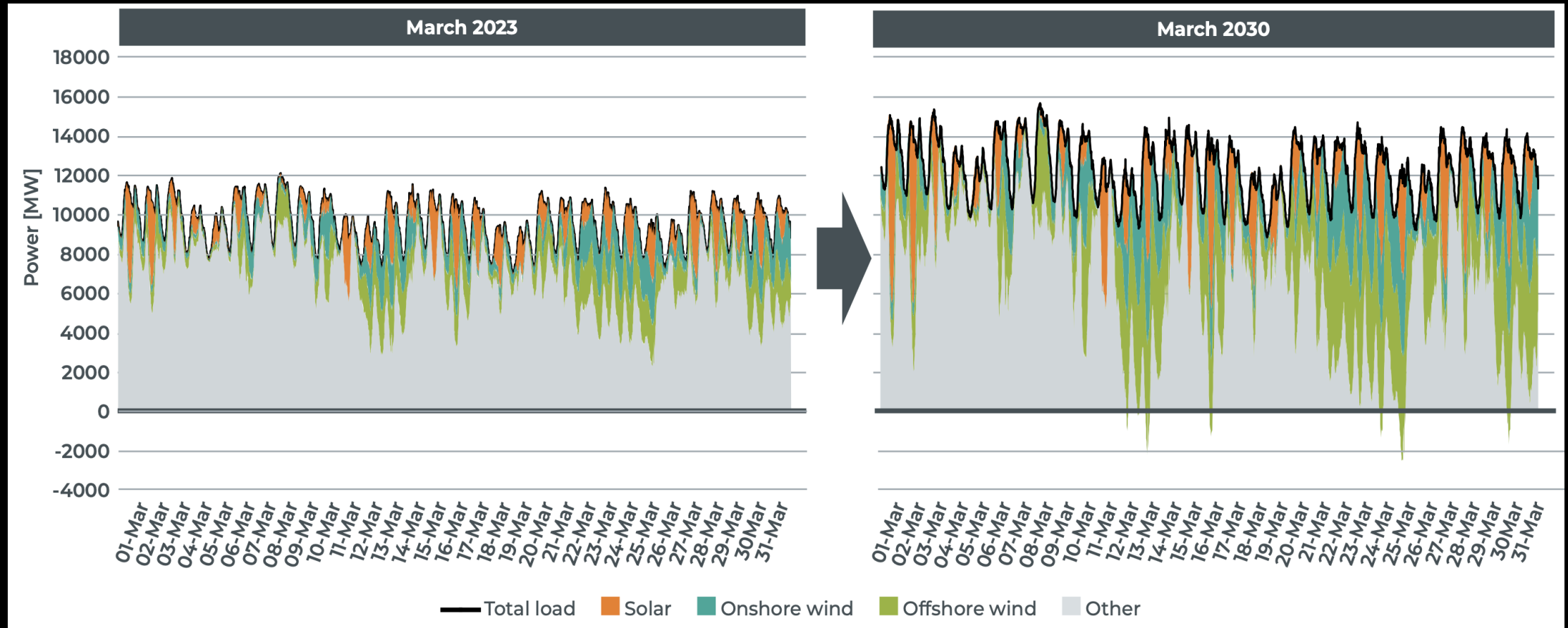
What about electricity
and grid capacity?





Will there be enough energy?

Evolution of RES and Consumption: extrapolated





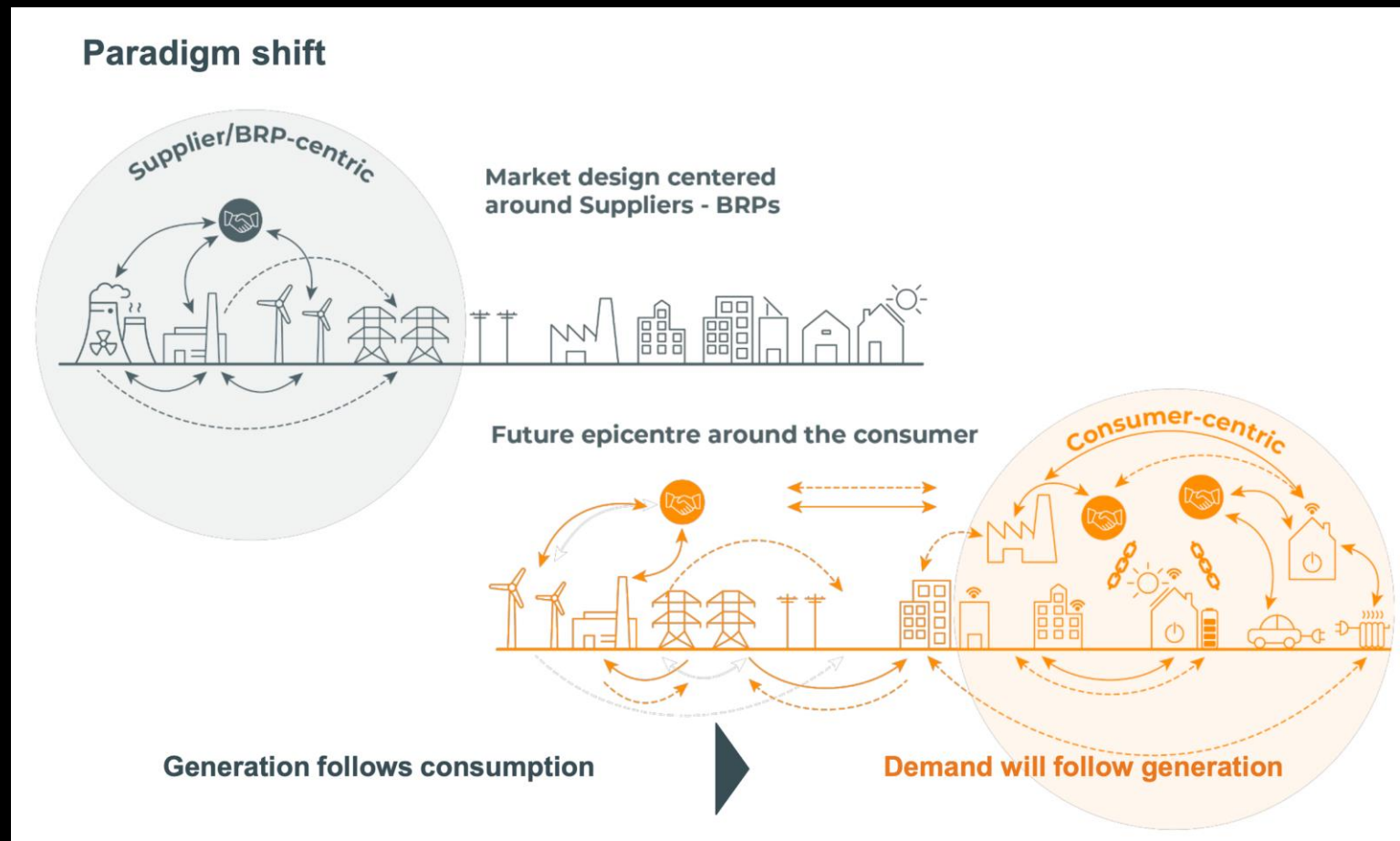
An aerial photograph of a large parking lot filled with cars of various colors (blue, white, red, black, green). The cars are parked in neat rows. There are some trees and a person walking in the lot. The text "BEV: a solution for clean mobility..." is overlaid in white on the upper part of the image.

BEV: a solution for clean mobility...

... and for flexibility activation



Energy System of the future = Consumer Centric



Demand follows generation: Flexibility

Explicit Flexibility

- Activation by Elia (hard signal)
- Auction Based
- Obligation to deliver

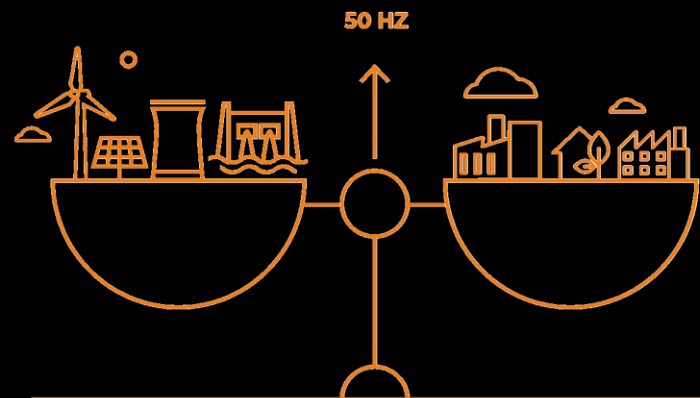
- FCR
- aFFR
- mFFR



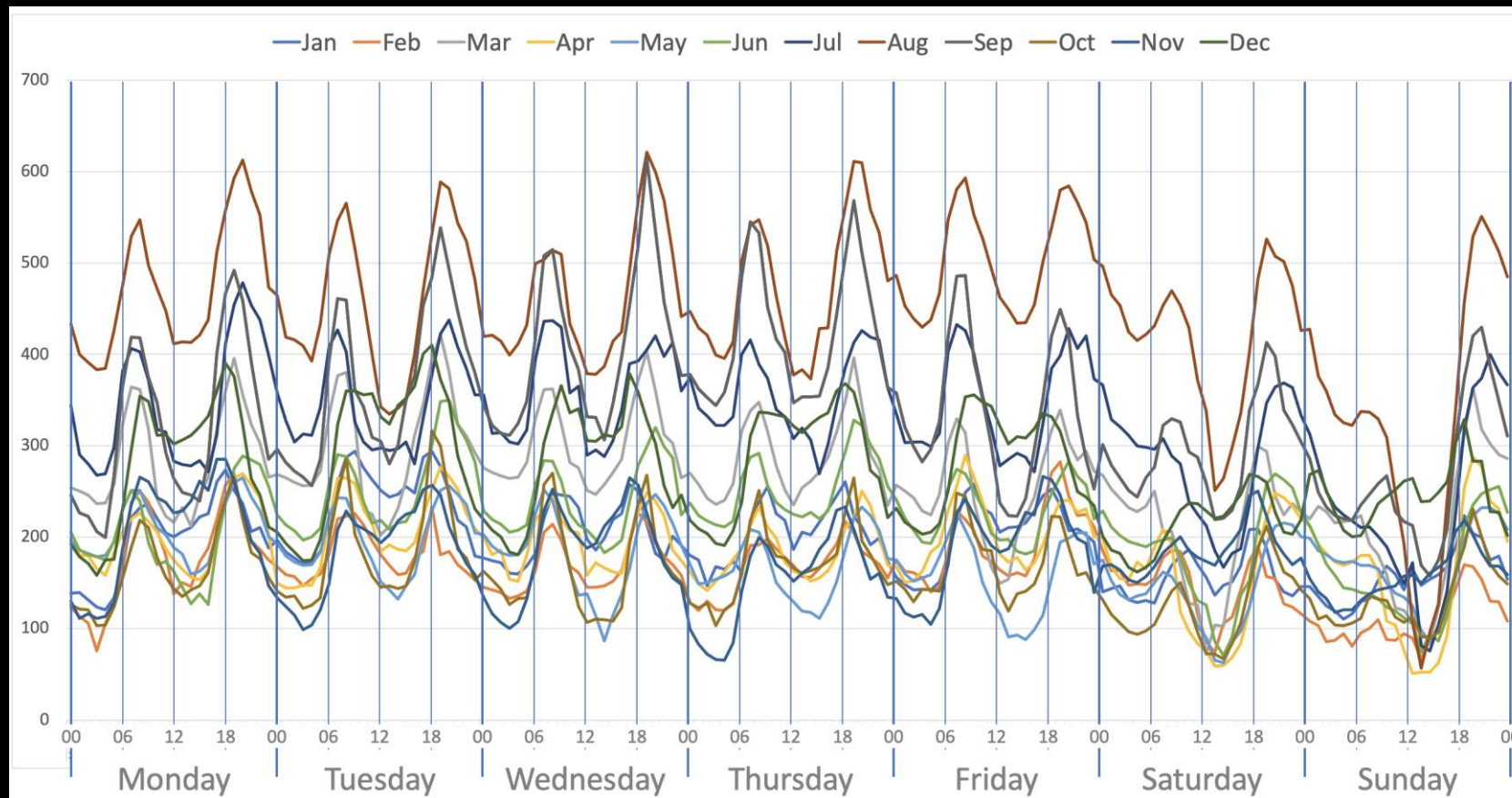
Implicit Flexibility

- Activation by owner
- Price signal based
- Free to join

- Day Ahead Market
- Intraday
- Imbalance

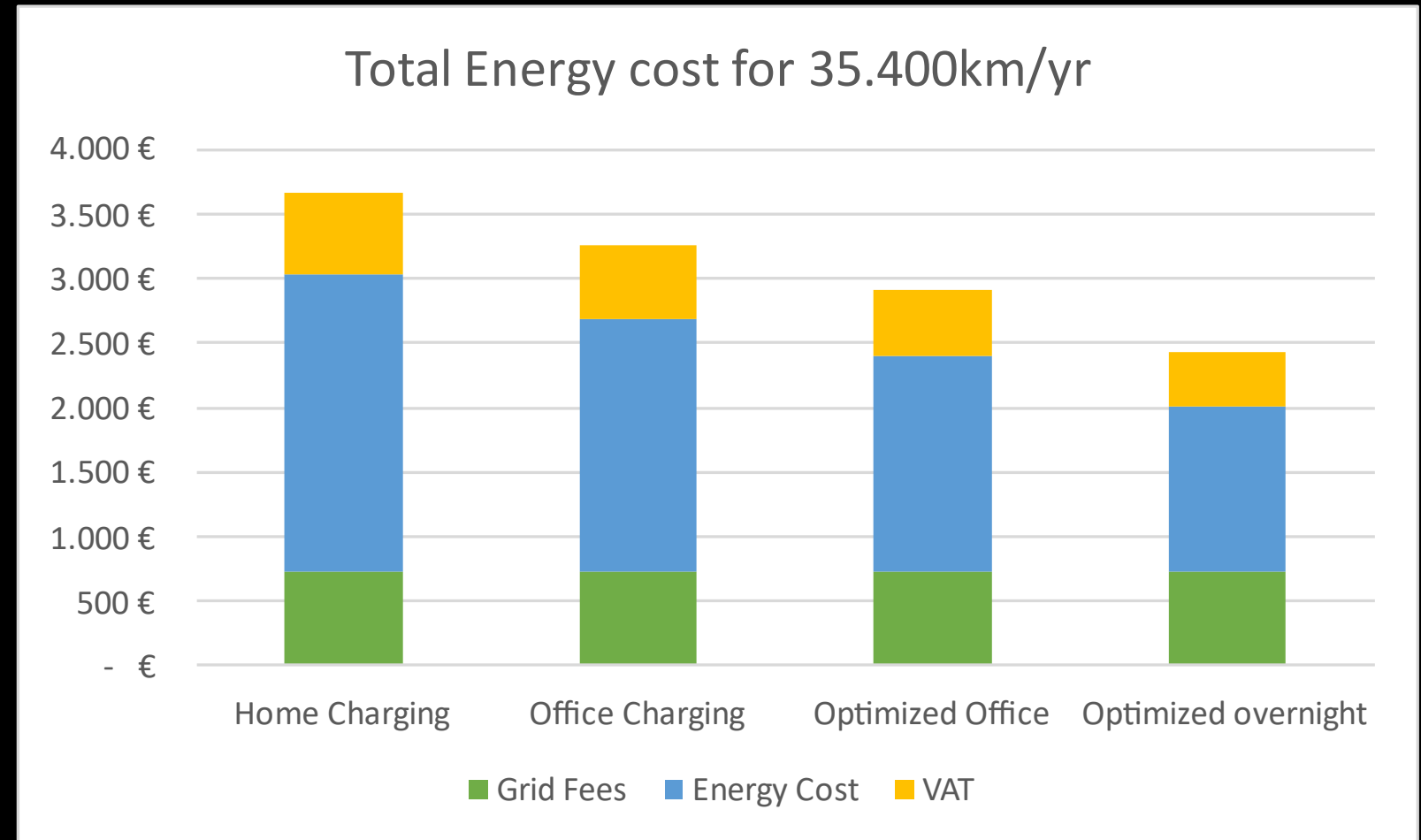


Day-Ahead based charging (Time of Use)

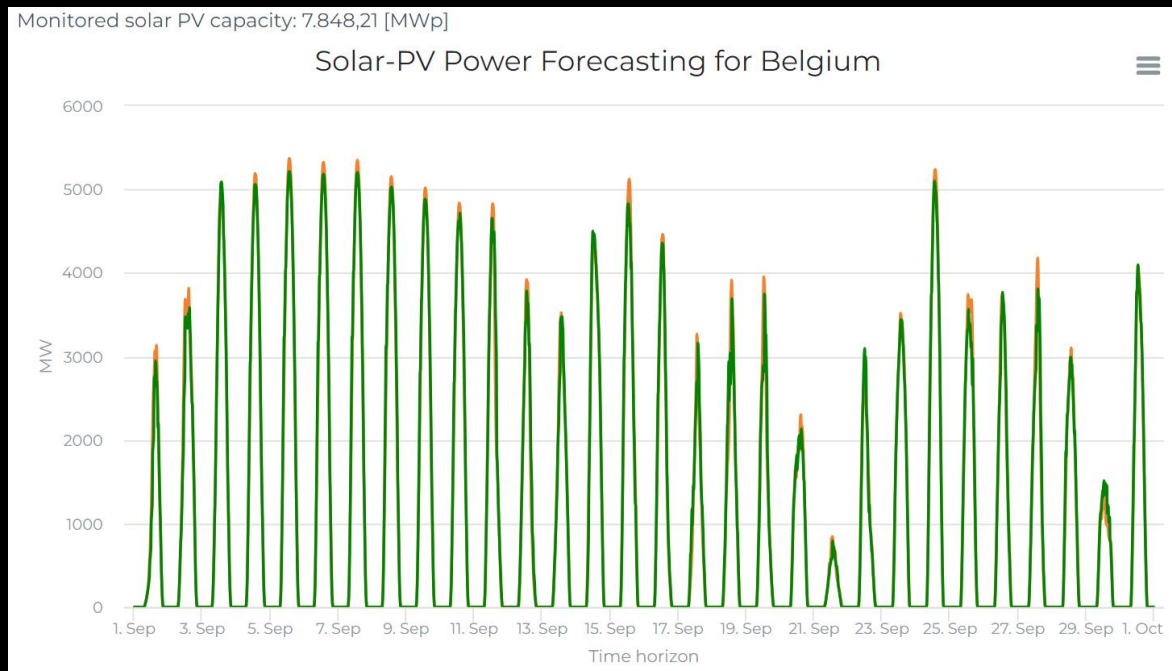


Charging cost per scenario

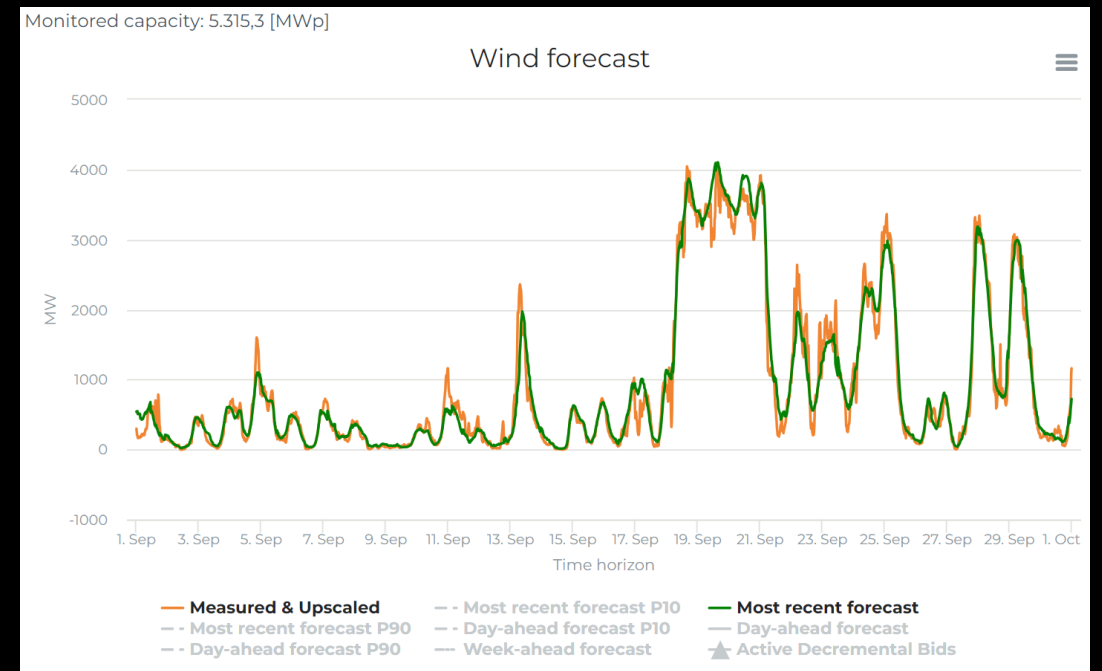
- **Schedule 1: 18:00**
 - Avg: 0,50€/kWh
- **Schedule 2: 9:00**
 - Avg: 0,45€/kWh
- **Schedule 3: 12:00**
 - Avg: 0,40€/kWh
- **Schedule 4: 3:00**
 - Avg: 0,33€/kWh



Charge when the renewable energy is available

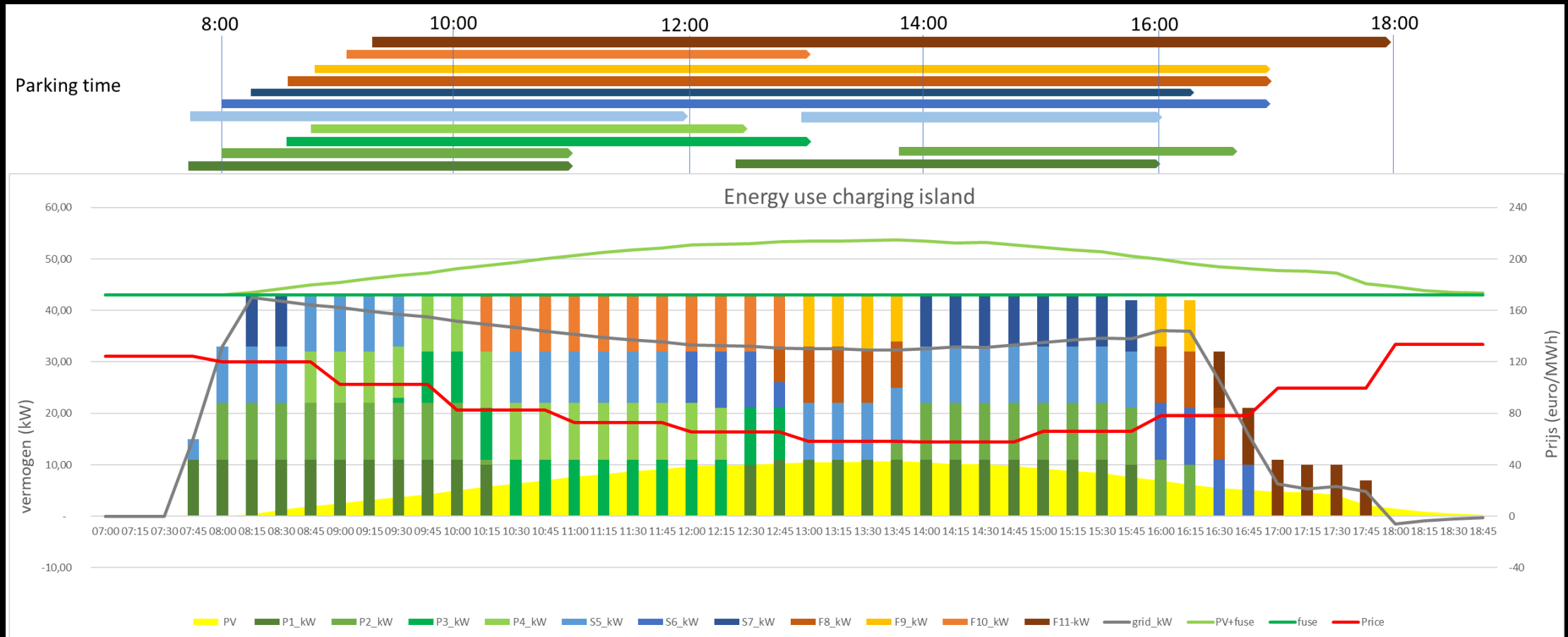


Solar Forecast



Wind Forecast

Smart Charging Algorithms



What do we need to know?

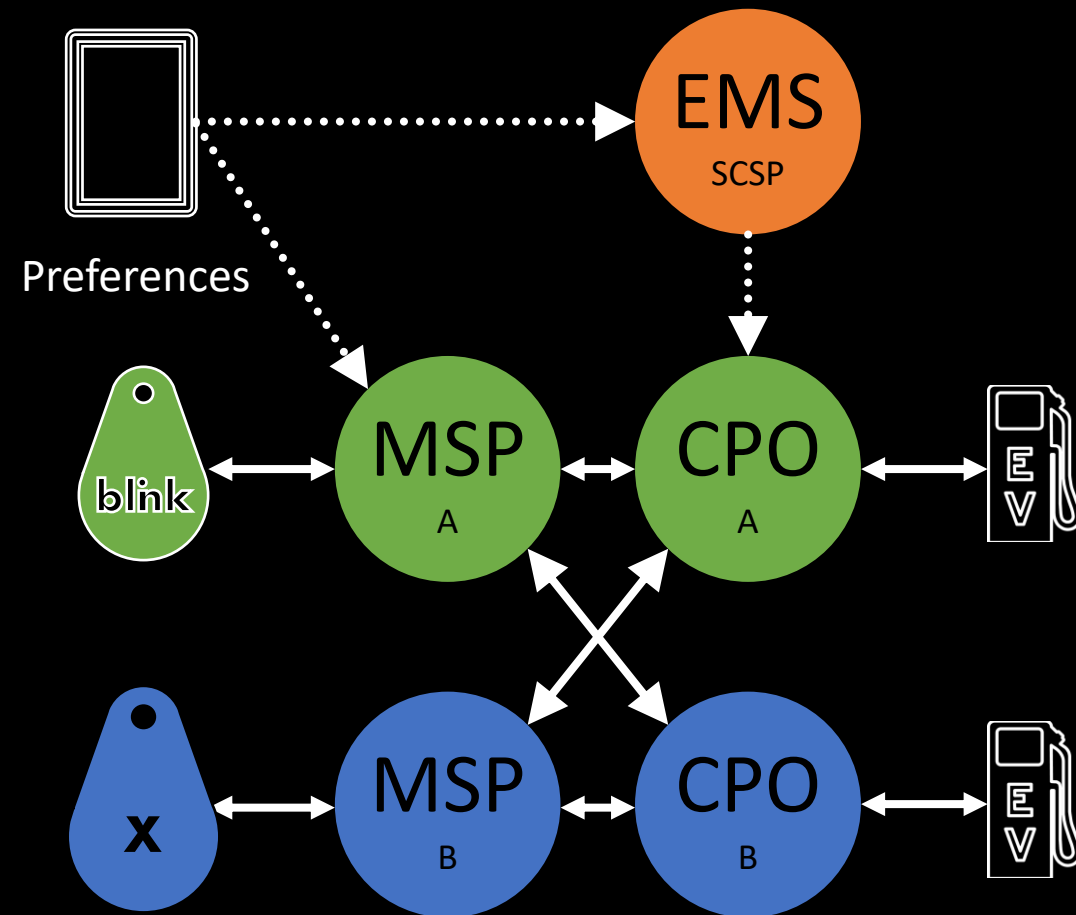
Customer Centric Public Charging

- **What does the customer need?**
 - Volume of kWh
 - Time to leave?
- **What is the customer preference? (willing to pay)**
 - Cheapest Charging
 - Greenest Charging
 - Fastest Charging
- **Easy to understand**



Challenges of HUME

- **Connect the intelligence (EMS) to the CPO**
 - Protocol version en extensions
- **Get the preferences**
 - QR code?
 - In App integration with eMSP?
- **Work in the charging Ecosystem**
 - Other MSP's
 - Other CPO's



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It's not about
the charger...



... but about the
right experience in
each situation



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