

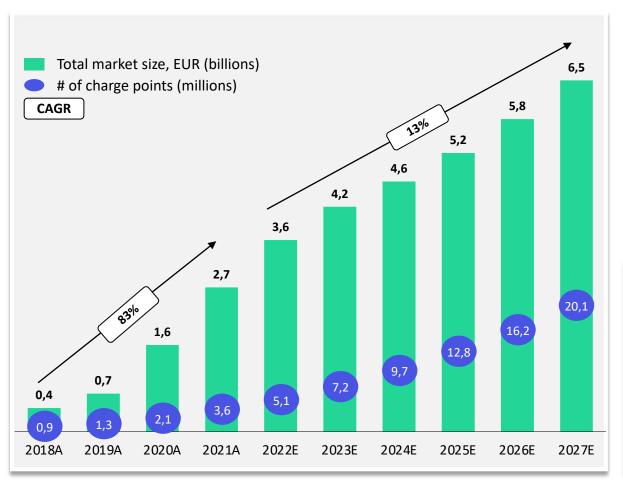
# Faster, better, stronger?

Building sustainable charging infrastructure in a demanding energy market



## Eways – a leading independent charge point operator in Sweden

Eways offers a complete and comprehensive service making it easy to drive electric vehicles



Customer segments				
Home	Work	Destination AC		
~45%	~35%	~20%		
House Apartment	Office	Public Fleet		



#### Some of our customers

ambea:























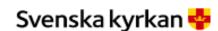






















































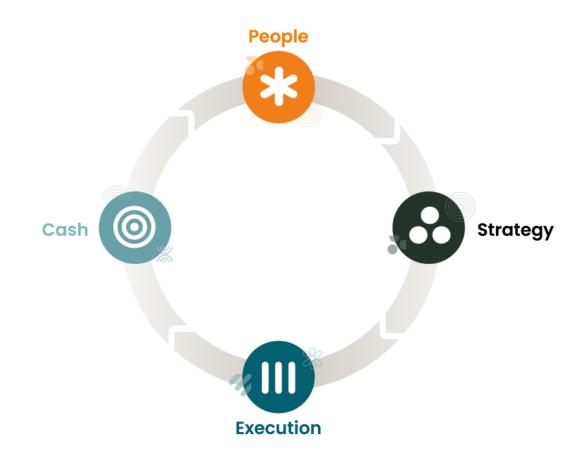






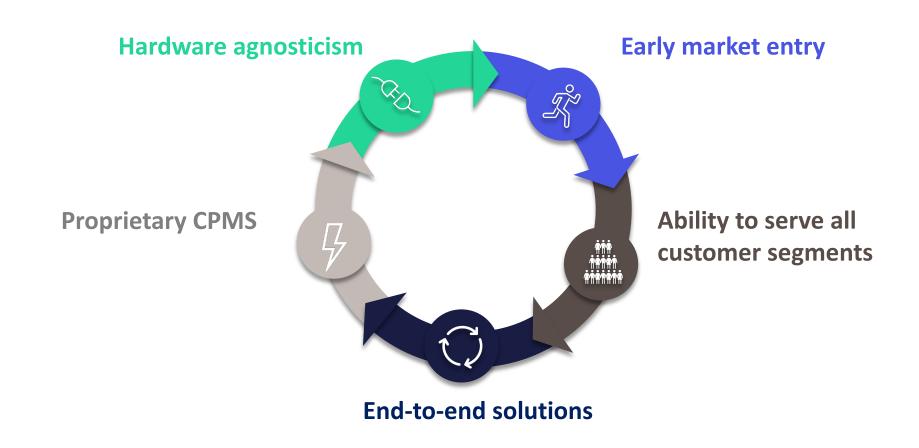
# Scaling up flywheel

An MIT methodology and toolbox to accomplish sustainable growth



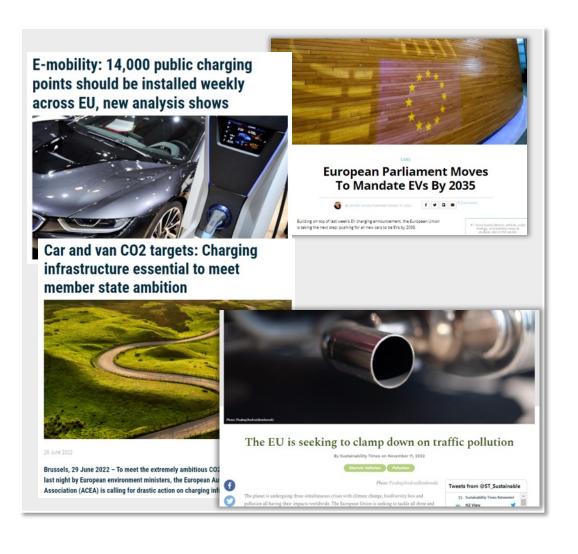
## **Clear differentiators setting Eways apart**

Strategies across the entire EV charging value chain





# Interrelated trends in the mobility landscape



> Traffic volumes are increasing

Total demand for urban passenger transport will more than double by 2050, compared to 2015

> Shift in transport modes

Shared mobility, zero emission zones, electric and autonomous vehicles disrupt urban mobility

- ➤ Increasing attention on decarbonization while public funding is being decreased
- ➢ Price parity ICE vs BEV supports 2035 zero emission car sales
- > Energy and power shortage across all countries

# **Navigating the transition**

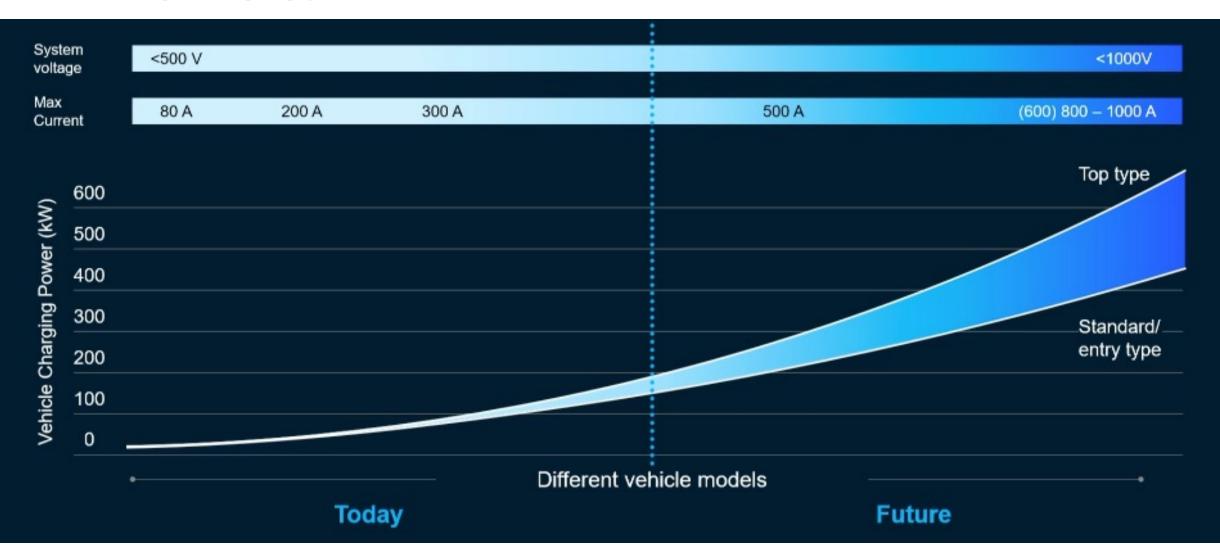
Faster is not always better

#### **Challenges**

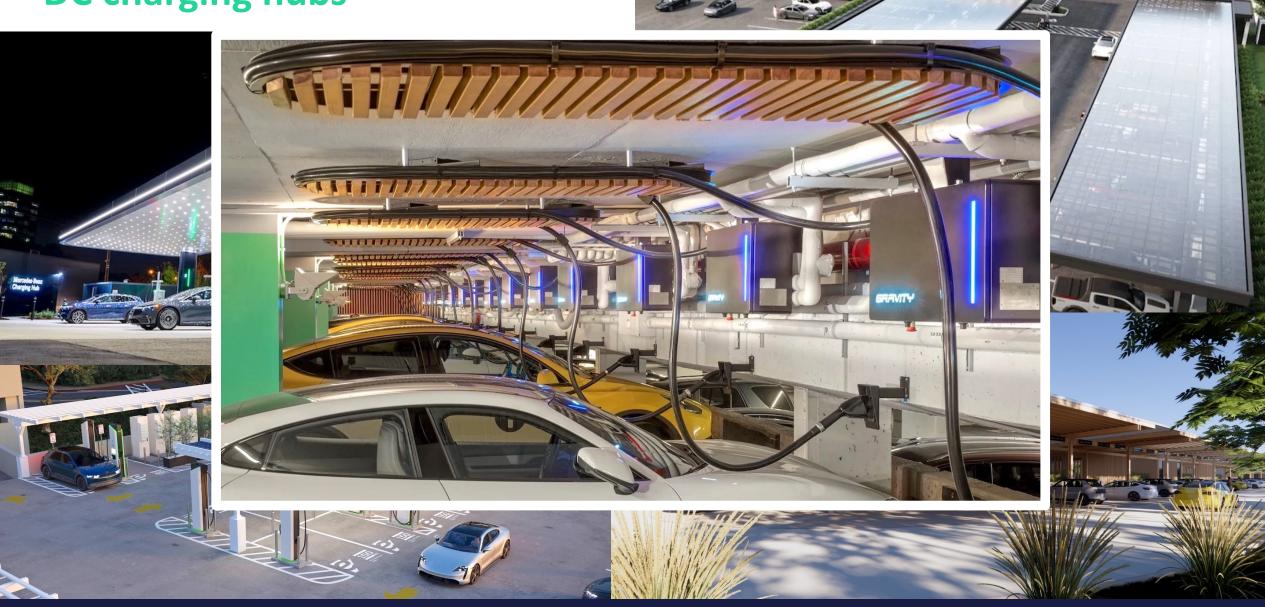
- Perceived need for public DC charging
- Need for increased knowledge and experience
  - Average driving distance per day: 30-40 km
  - Analyze the daily charging needs
  - Power tariffs can increase cost
- Behavioral change "charge when stopping, don't stop to charge"
- Price fluctuations be a conscious consumer and avoid costly spikes
  - use load balancing
  - schedule the charging
- Grid stability large scale fast charging affect the grid

Phases	Current	Power	Distance
1-p	16 A	3,7 kW	20 km/h
1-p	32 A	7,4 kW	40 km/h
3-р	16 A	11 kW	50 km/h
3-р	32 A	22 kW	100 km/h

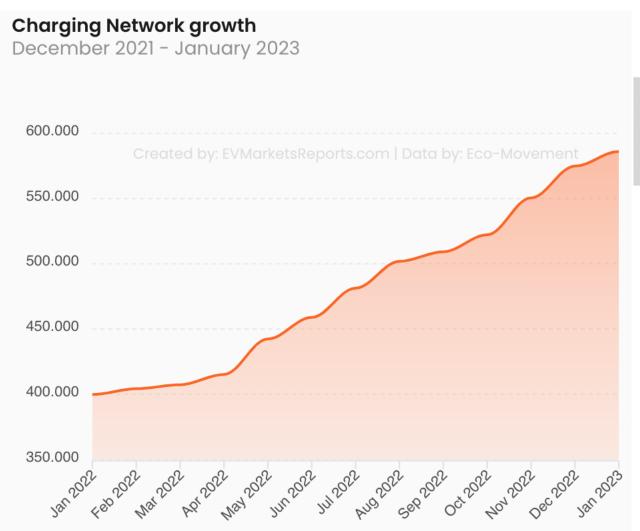
### **Increasing charging performance**

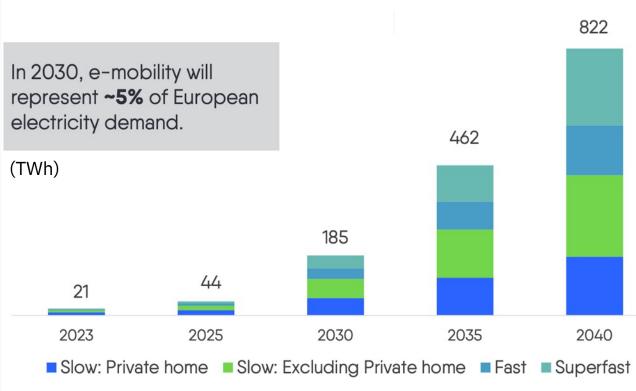


# **DC** charging hubs



# European forecasted total electricity demand for EV charging



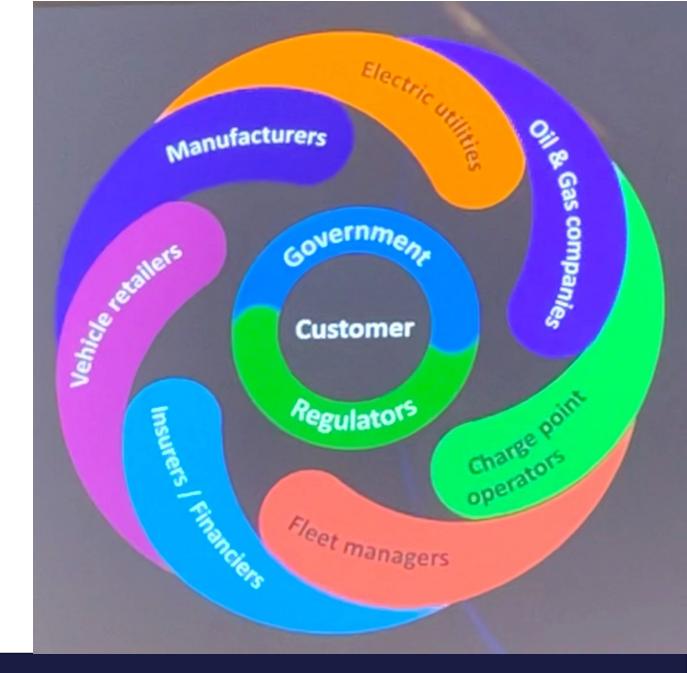




## **Managing energy demand**

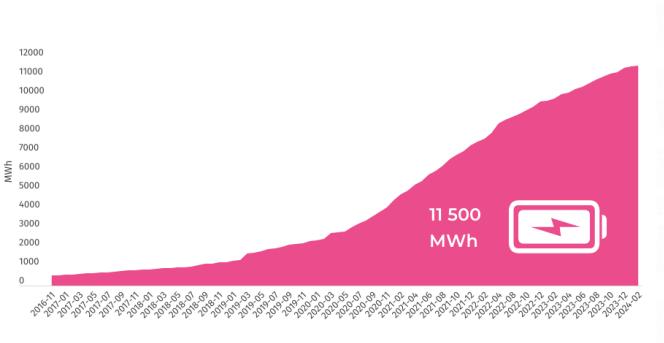
#### **Smart grids**

- Flexibility market
- Managed load balancing
- Energy storage
- Aggregation by demand-response capabilities
- Bidirectional charging technologies (V2X)
- Flexible connection agreements & tariffs
- Reinforce distribution grids





## EV charging as resource



#### Type of charging



#### Cloud storage at condominium



#### Asset backed trading



#### Battery supported charge points



#### Frequency containment reserve



#### Bidirectional charging



- Use EV battery as stationary storage for residential home or emergency power bank
- Use fleet of EVs as cloud storage for solar buffering and peak shaving
- Build up storage capacity based on EV fleet for wholesale trading
- Selling battery capacity to local DSO flexibility markets
- Prequalify fleet of EVs for frequency containment reserve just like dedicated stationary storage

