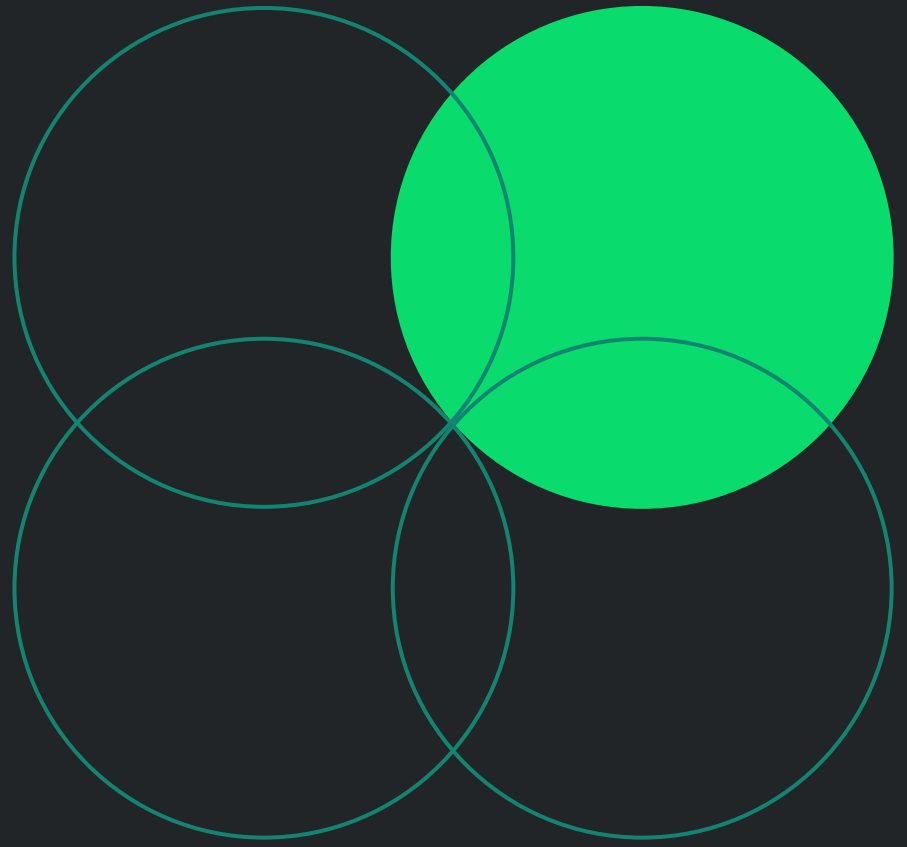
B. new. able

**BESS for charging and logistics hubs  opportunities and challenges**

Your partner in the acceleration of your energy transition to **NET ZERO**

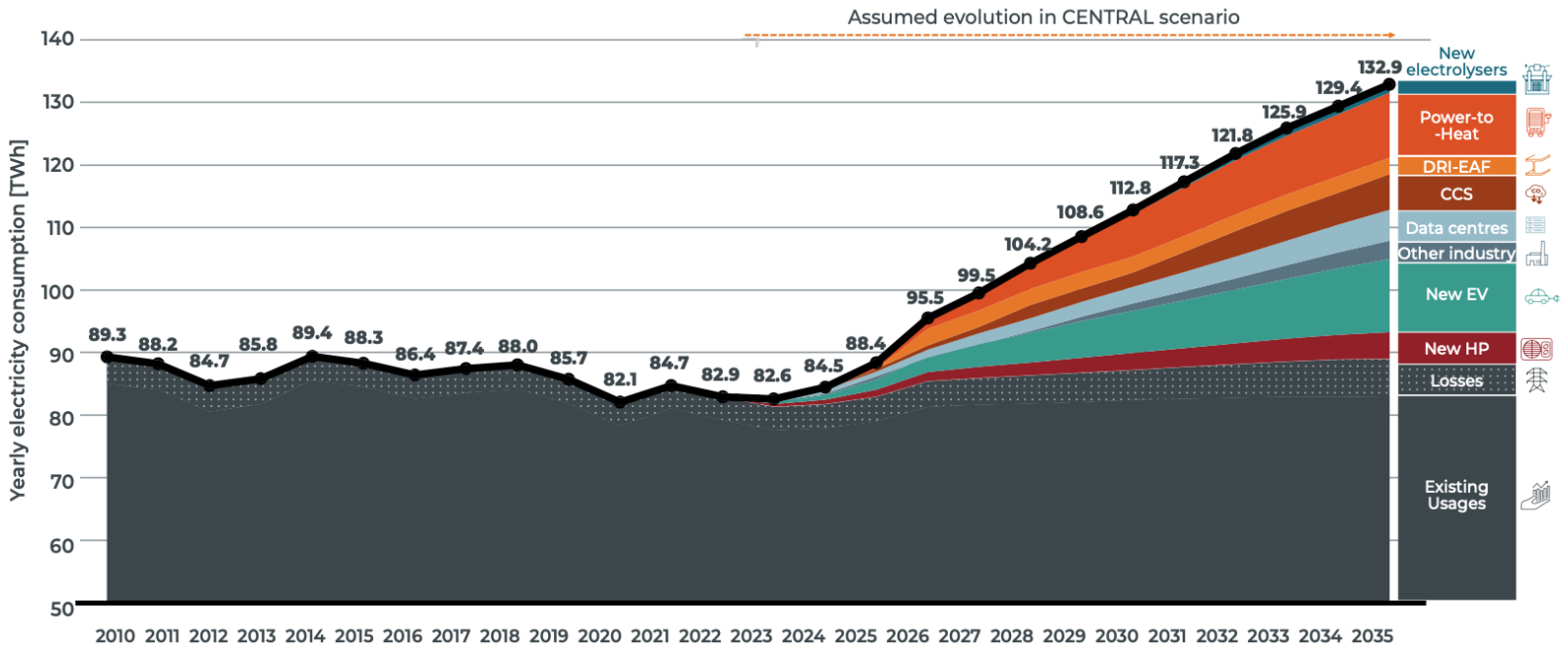


# Observation BE - Energy Consumption evolution

## Electrification leading to increased power consumption

**Power consumption is expected to double in the next decades -** The greater part is driven by a replacement of fossil fuels for heating, industrial proces energy and transport.

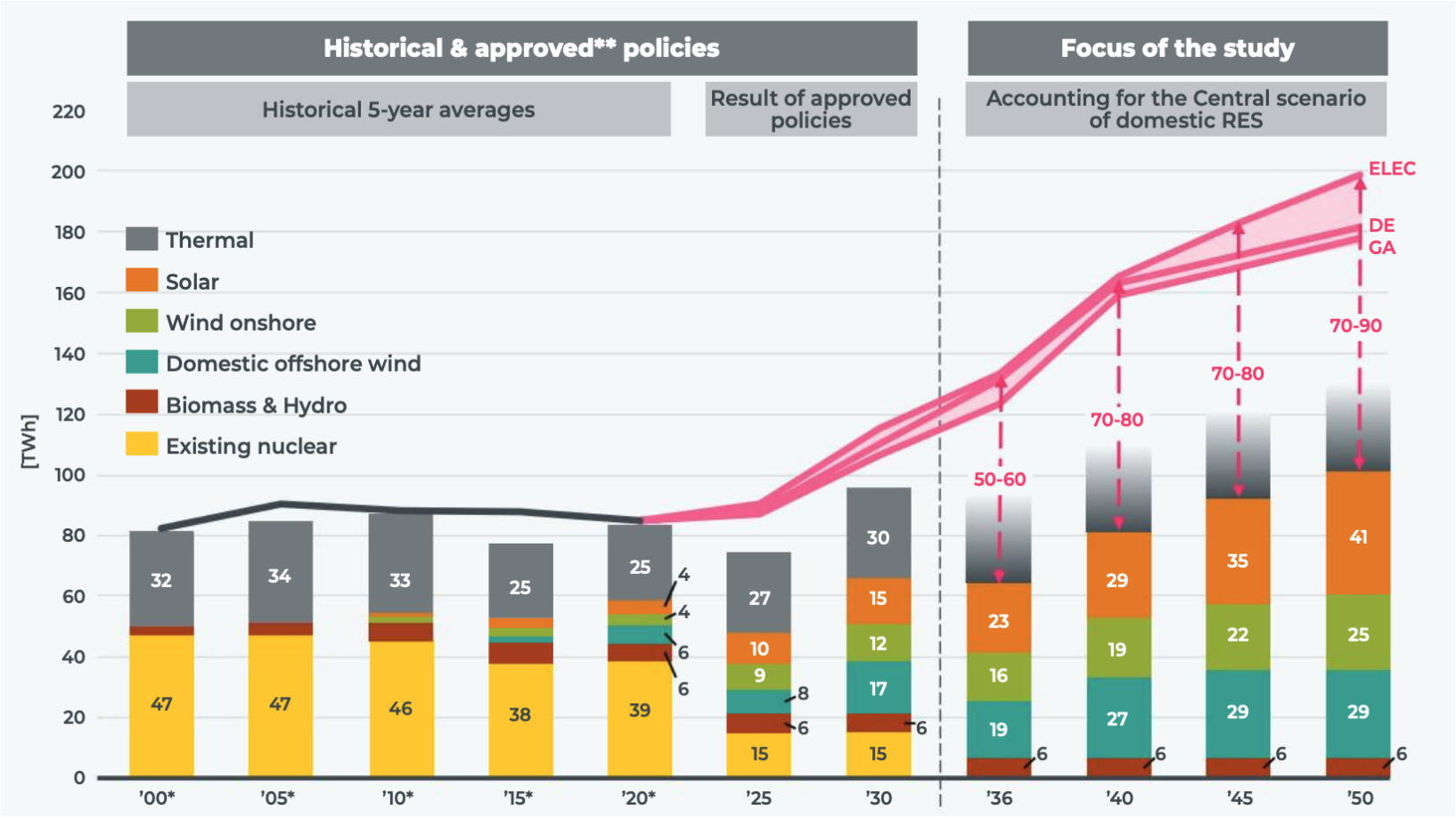
**FIGURE 3-13 — NORMALISED HISTORICAL AND ASSUMED FUTURE YEARLY ELECTRICITY CONSUMPTION IN THE CENTRAL SCENARIO FOR BELGIUM [TWH]**



# Observation BE - Electricity generation evolution

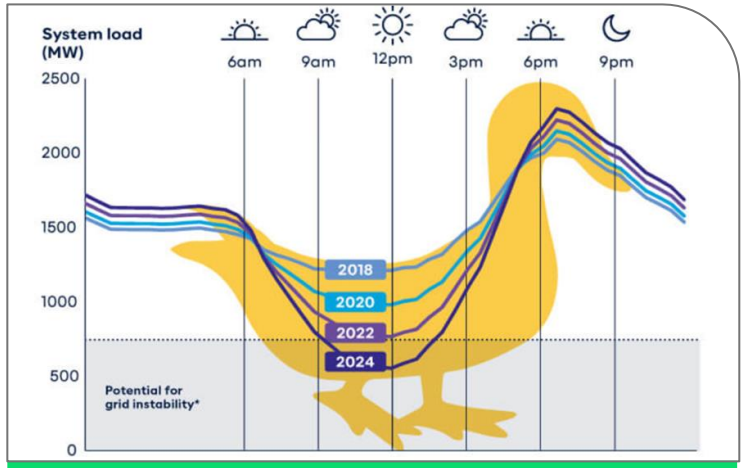
## Increasing renewable generation, but a generation gap remains

- Rapid **growth in wind and solar** is driving decarbonization in Belgium.
- A **generation gap** exists between rising electricity demand and available capacity.
- **More CO2-neutral generation is critical** to meet future needs.
- The increase in renewables will **strain the grid**, requiring upgrades to handle congestion and ensure stability.
- Industry will have to be pro-active to secure the good energy sources at interesting prices.



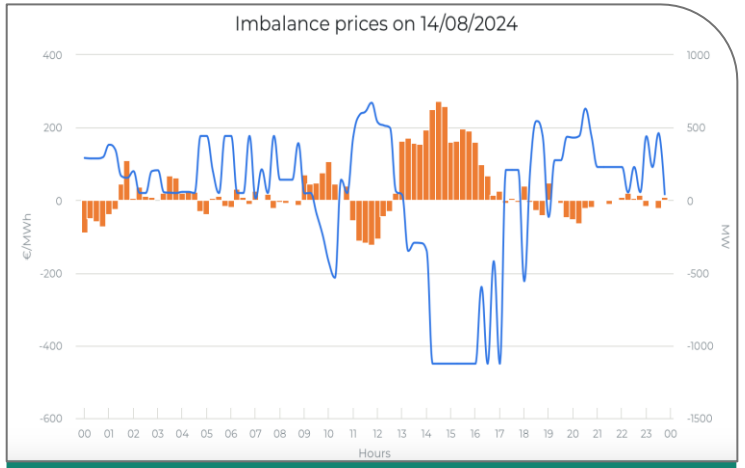
# Challenges brought by changing generation and consumption

## Forcing to change your behaviour



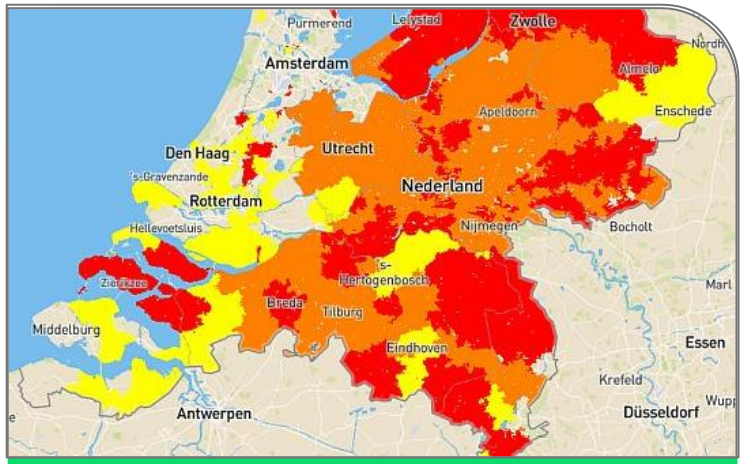

### Energy price volatility

- Low prices during the day
- High – extreme prices during the evening peak




### Balancing

- Increased balancing costs
- Exposure to imbalance cost



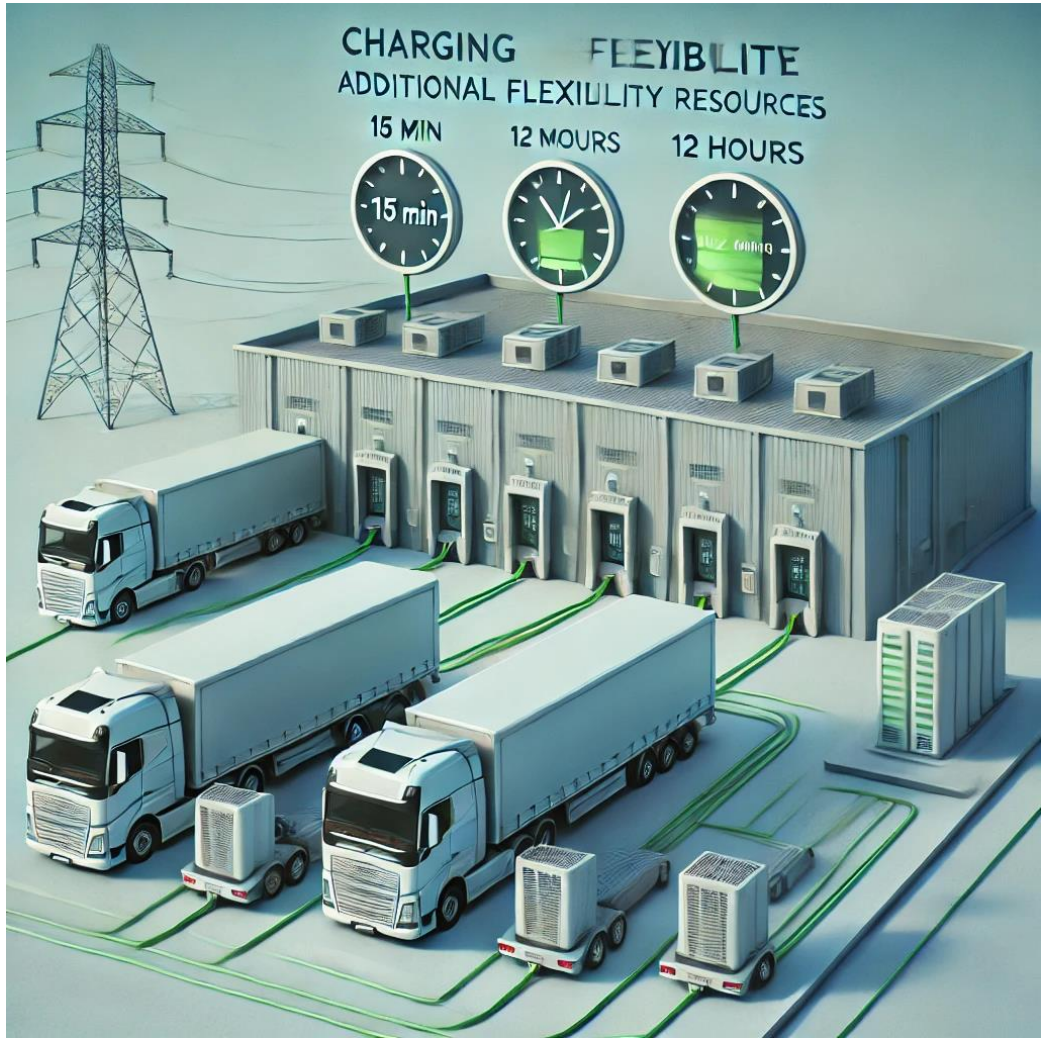

### The Grid

- No-grid capacity
- Flexible Grid connections
- Increased grid fee’s
- New Grid fee pricing mechanisms (time of use)

# Change electricity behaviour - Flexibility is the solution

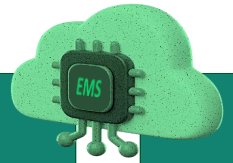
Depending on some key parameter the solution will be different

- **Grid Connection Capacity VS Connection time** - May necessitate a battery to support limited capacity.
- **Local Generation** - Enhance self-consumption, lowering energy and grid fee costs.
- **Charging Process Flexibility -** Assess duration and flexibility of charging.
- **A Site-Specific analysis is required to know the best solution for you.**



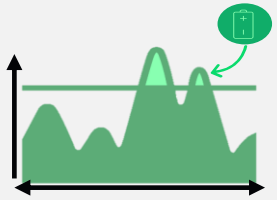
# Leveraging flexibility requires intelligent management

## Continuous arbitrage between markets

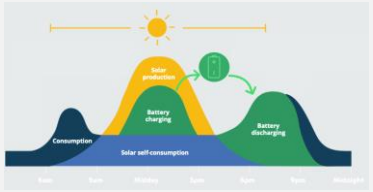



### Behind the meter optimisation

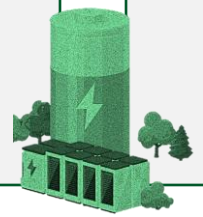
**Increased quality of a charging session –** increased peak power.



**Reducing energy & grid fee costs -** Shifting consumption, effect increased with local generation




**Save on CAPEX on the grid connection costs –** Lower grid connection required with BESS



### Stacked with market revenue

**TSO diensten**

- FCR
- aFRR

**Wholesale trading**

- Day ahead
- Intraday
- Imbalance

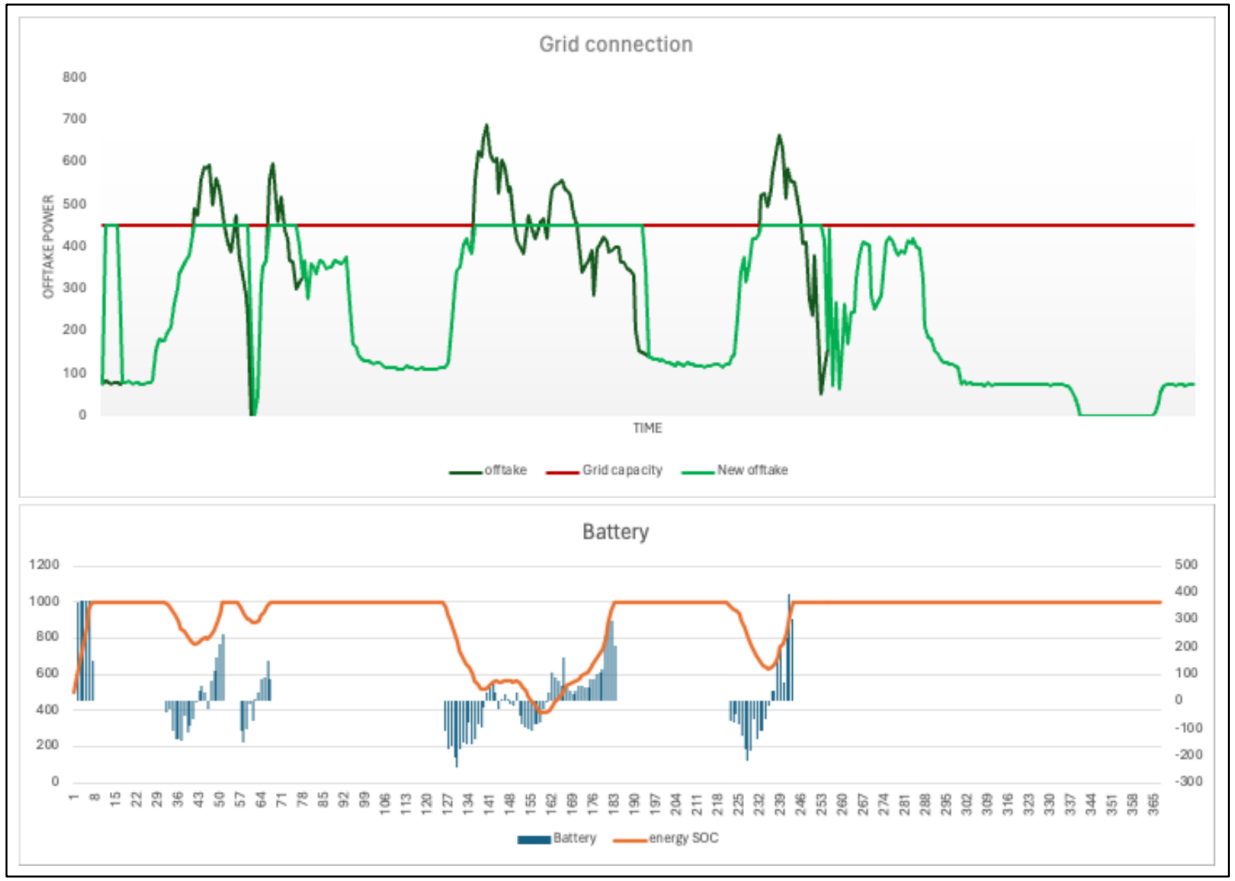
**DSO services**

- Congestion management

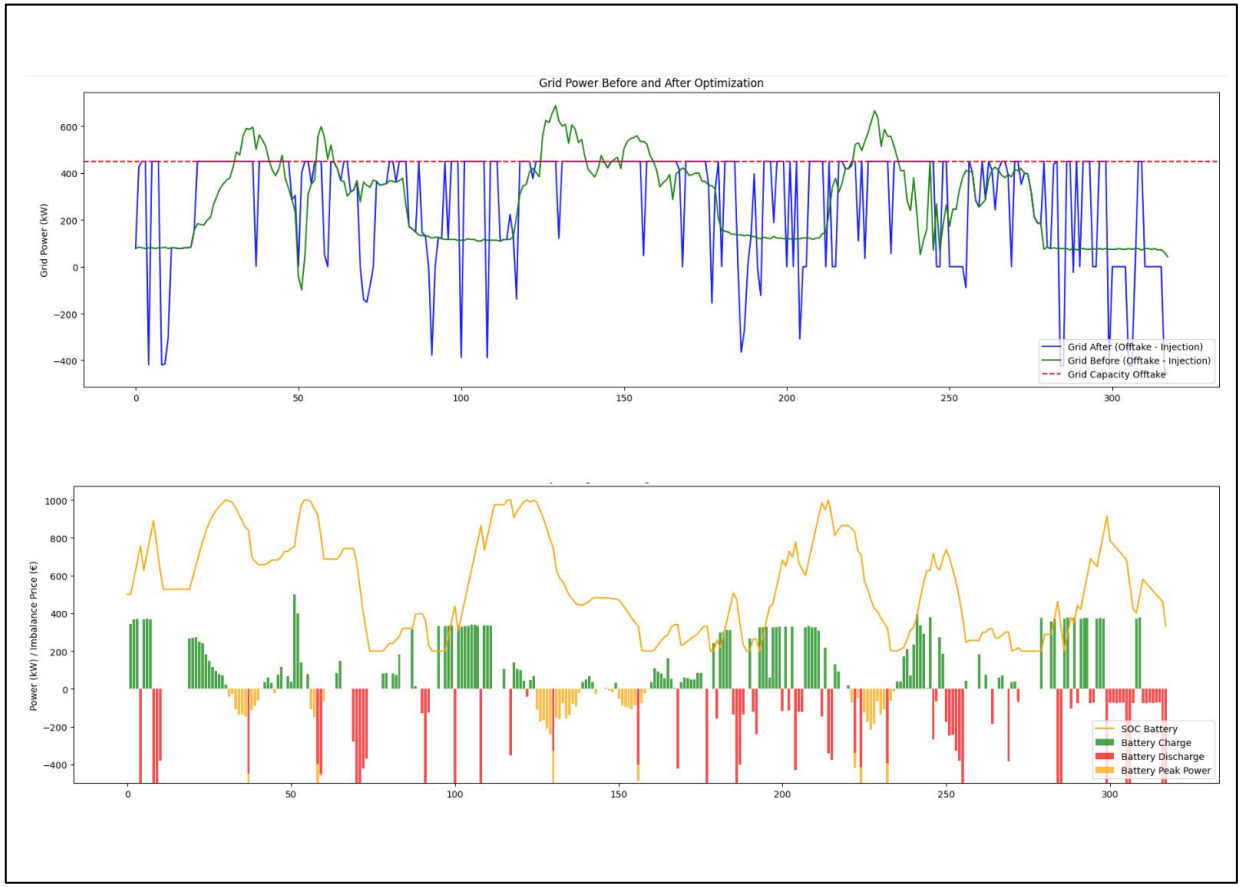
# Combining local needs with market optimisation

## Theoretical example

### Load balancing Basic




### Load balancing & DA + imbalance arbitrage



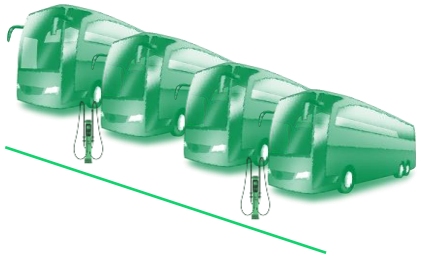
# Forecasting of the local behaviour is essential

## Connecting the Energy Management Platform with your fleet-, depot- & charging management systems

Bnewable's battery energy management system can integrate with external planning and optimization software for your (H)EVs, with a clear mission: **optimizing energy flows for maximum efficiency while prioritizing your operational needs.**

### Fleet- & depot management

- Route planning
- optimization(H)EV
- dispatching(H)EV battery SoC & SoH care
- …



*Slim Laden*

### Voltana – Energy mgmt

- Minimize charging costs while meeting operational needs
- Generate additional revenue in energy markets during off-peak hours

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*Voorbeelden van externe CMS / DMS / FMS :*

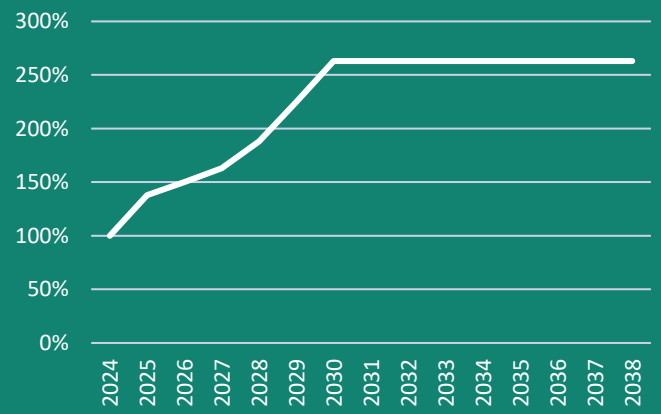
IVU TRAFFIC TECHNOLOGIES  KEMPOWER  MINT

# Case study

**Assumptions:**

- No evolution in grid connection capacity
- Yearly 3% grid fee cost increase

- Evolution of charging demand

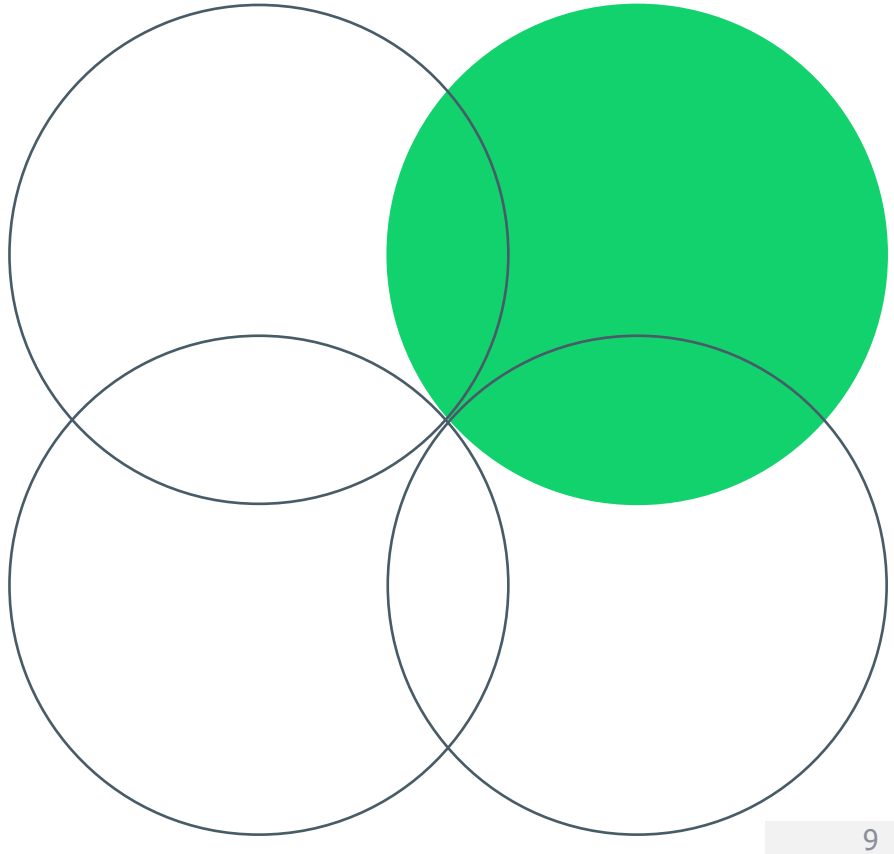



- BESS – 1MWh with +- 550 cycles/year with a 60k€ yearly lease fee.

*Disclaimer: prices and revenues shown in the next slide are indicative, non binding and for illustration purpose only.*

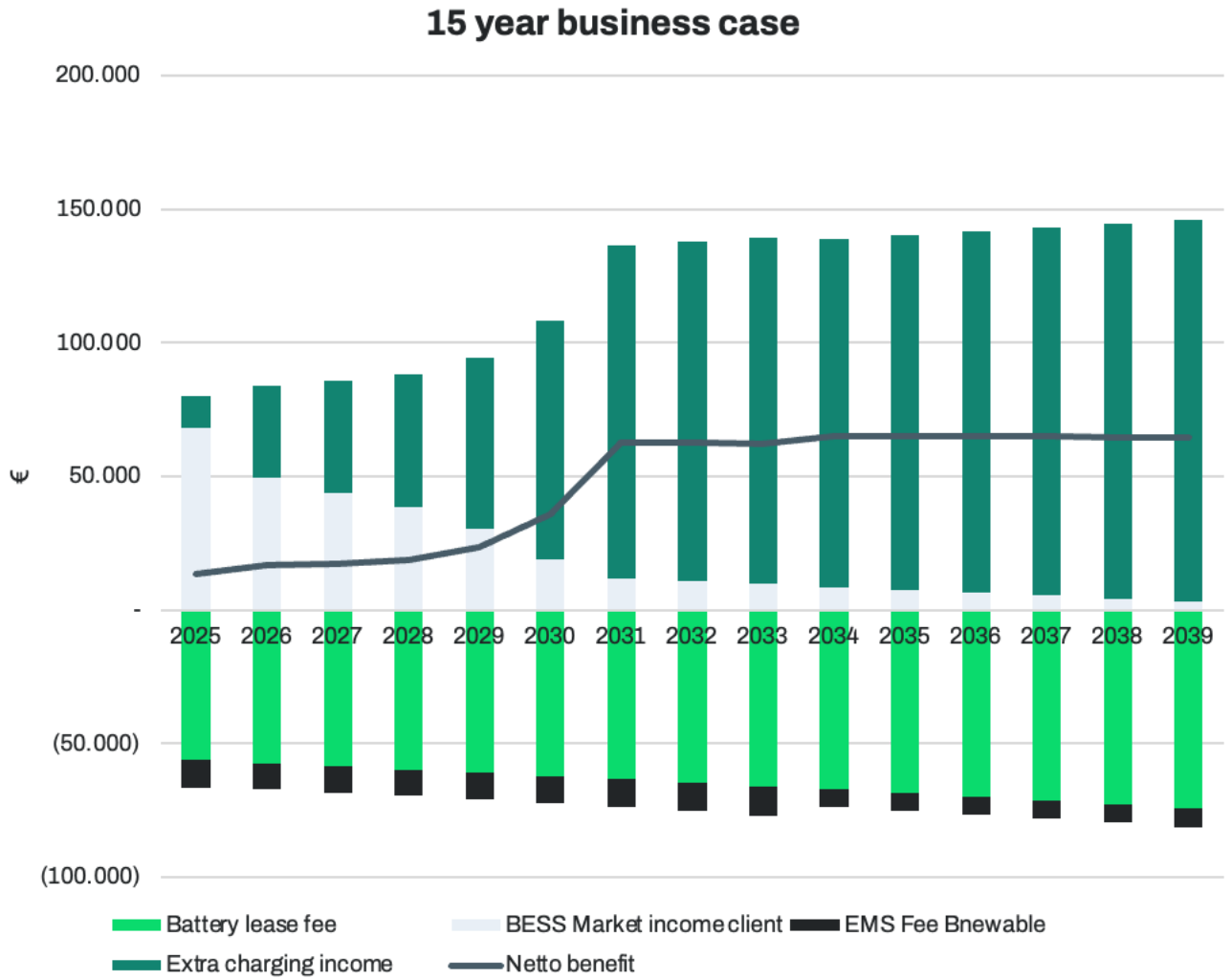
**Grid connection**
**250 kVA**

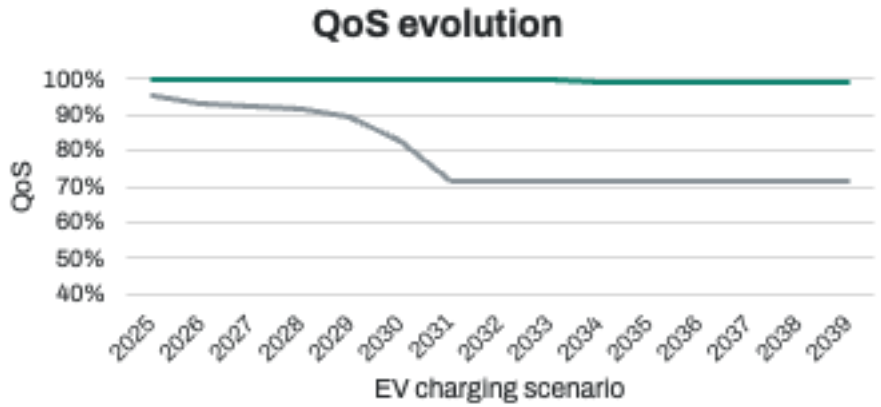
**Charging Stations**
**2x300kW double chargers**
*Charging uptake simulated for multi-year business plan*

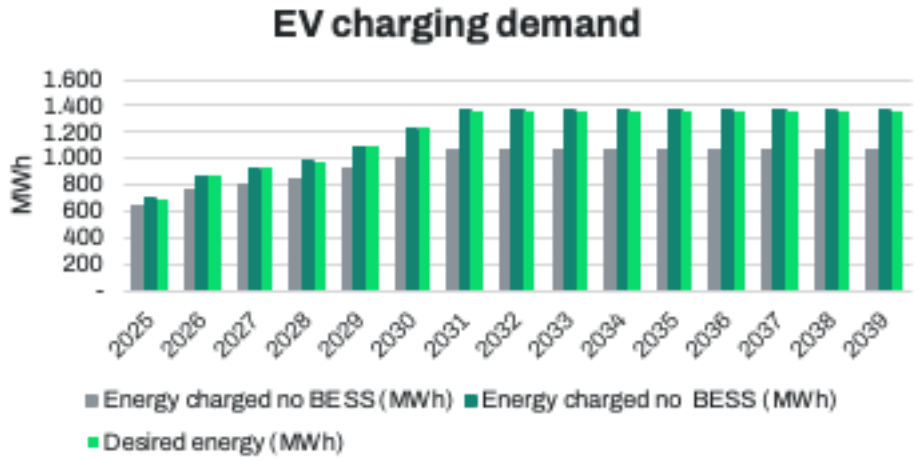


# *Case study – focus on Quality of Service*

## Multi year plan - Illustration







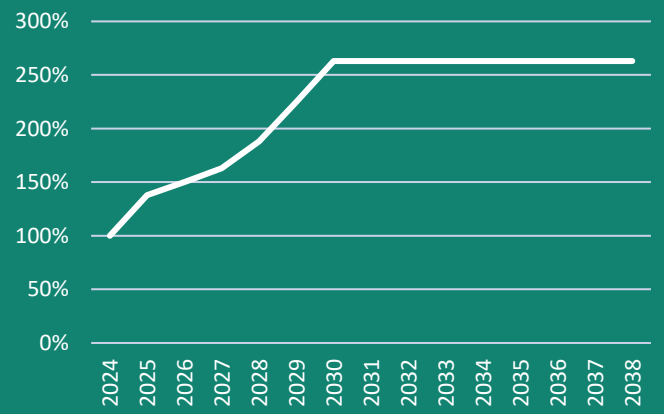

*Prices and revenues shown are indicative, non binding and for illustration purpose only.*

# Case study

**Assumptions:**

- **Evolving the grid connection capacity in year 5**
- Yearly 3% grid fee cost increase

- Evolution of charging demand

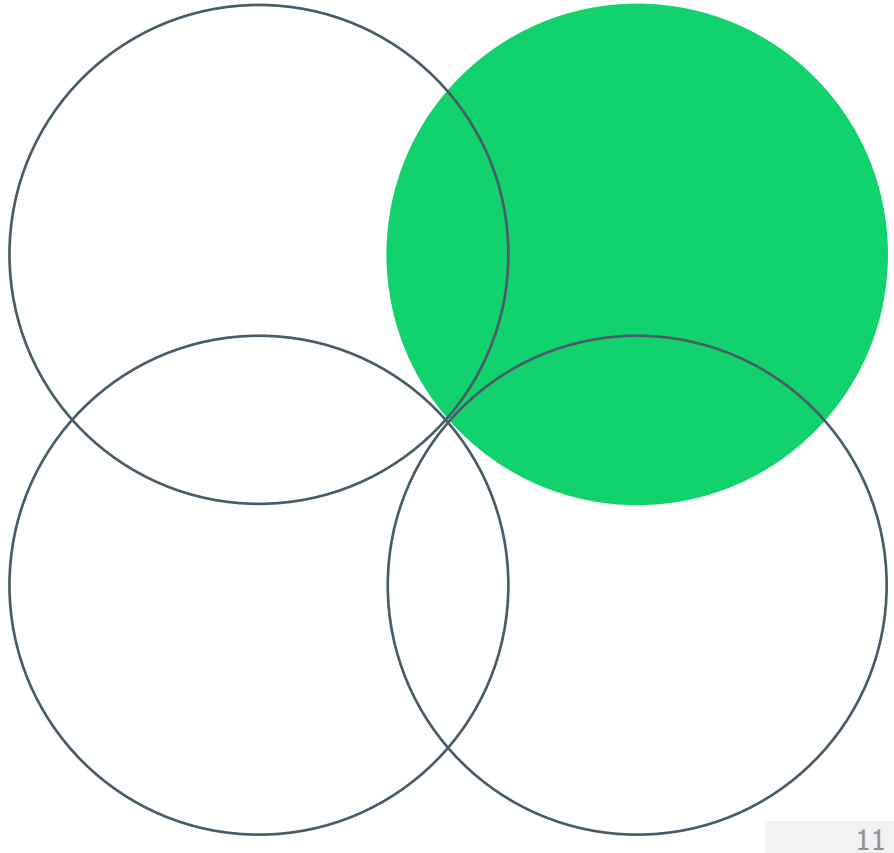



- BESS – 1MWh with +- 550 cycles/year with a 60k€ yearly lease fee.

*Disclaimer: prices and revenues shown in the next slide are indicative, non binding and for illustration purpose only.*

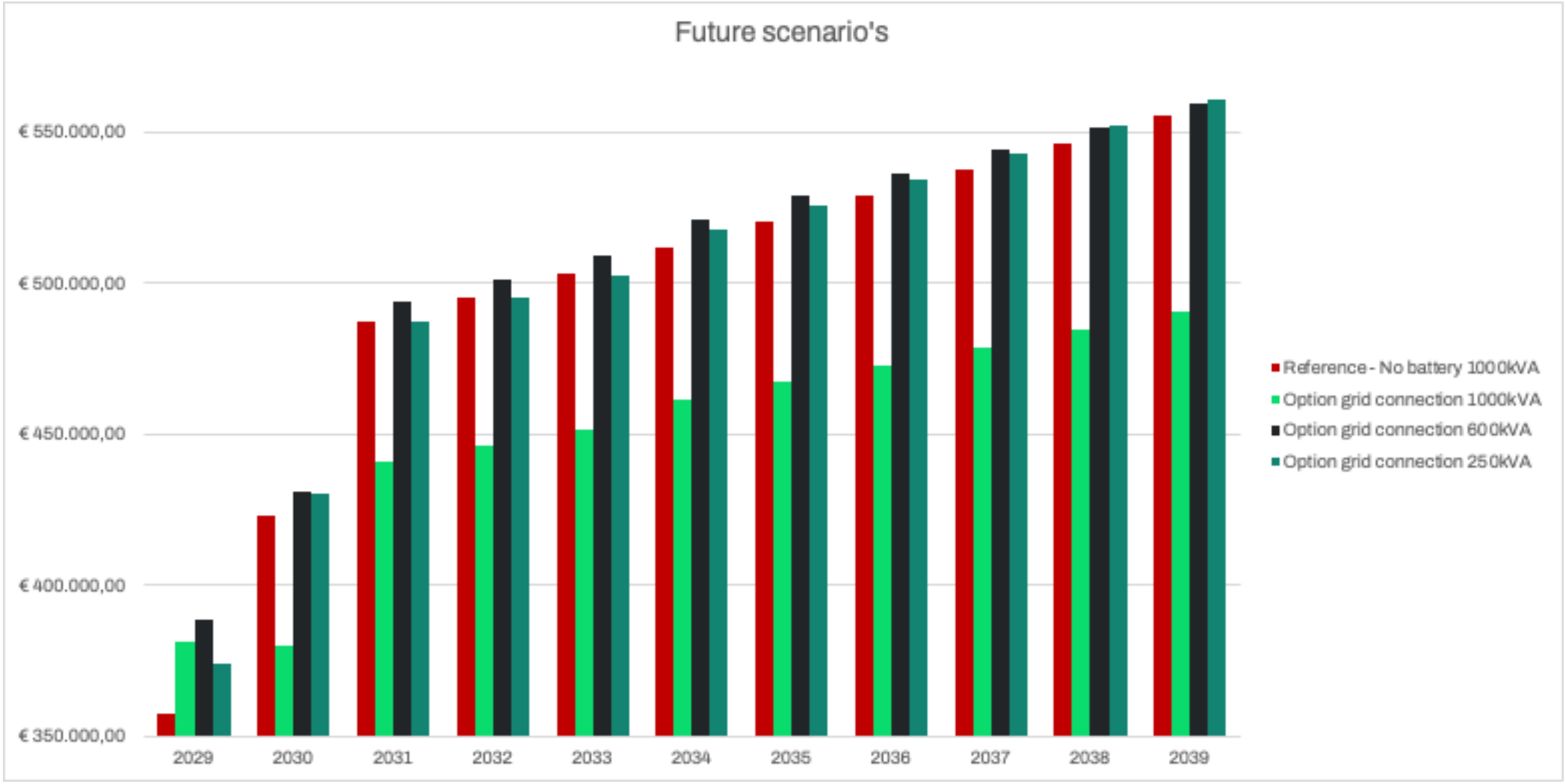
**Grid connection**
**250 kVA -> xKVA**

**Charging Stations**
**2x300kW double chargers**
*Charging uptake simulated for multi-year business plan*



# *Case study – reviewing grid connection*

## The battery keeps generating value

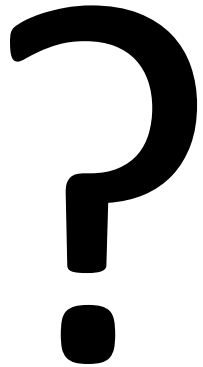






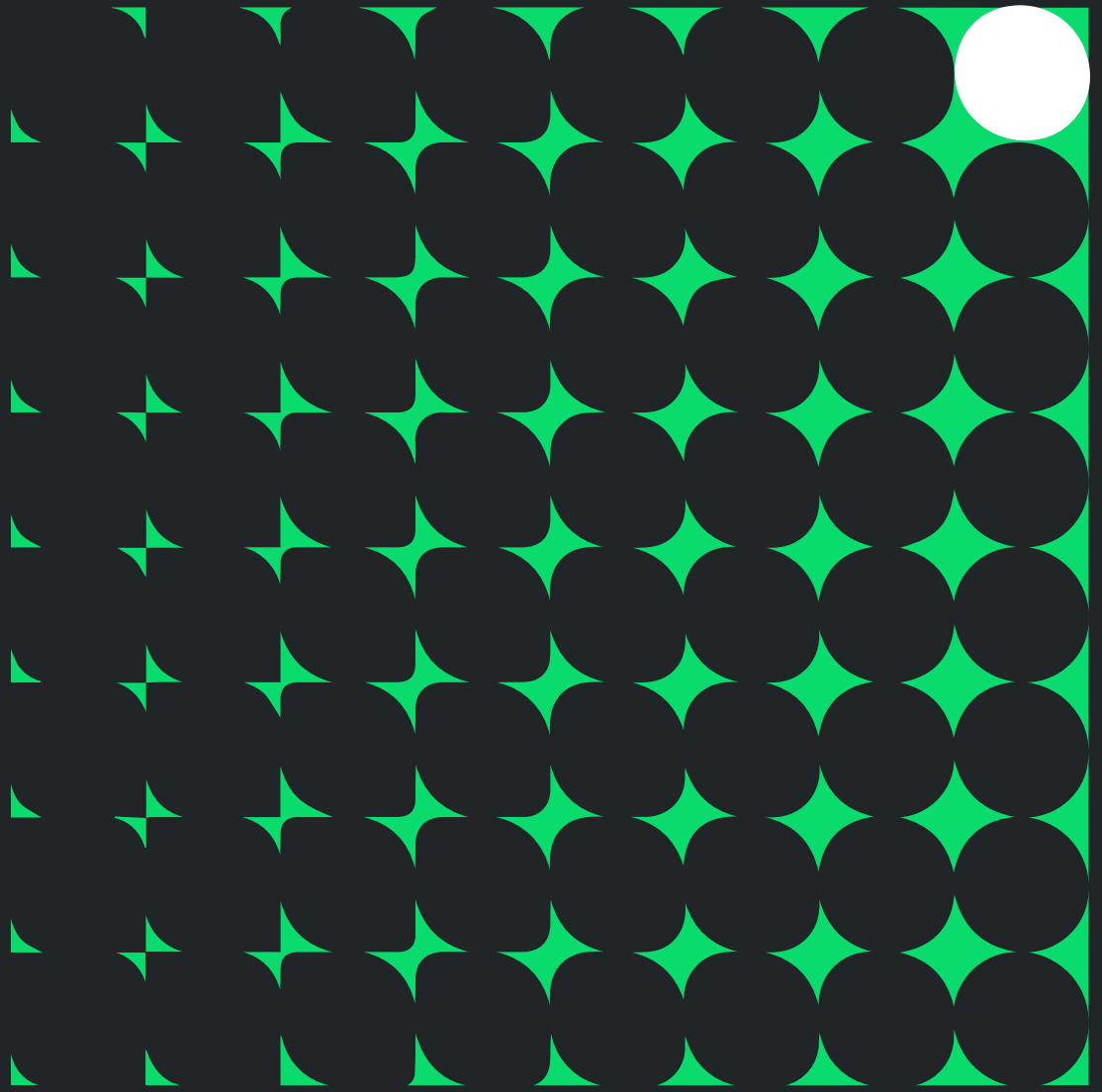

*Prices and revenues shown are indicative, non binding and for illustration purpose only.*

# *Evolution – What will the future bring*



But flexibility will have a role to play in the energy landscape.
Through steering charging or BESS

# Questions?



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**Your partner in the acceleration of your energy transition to NET ZERO**