

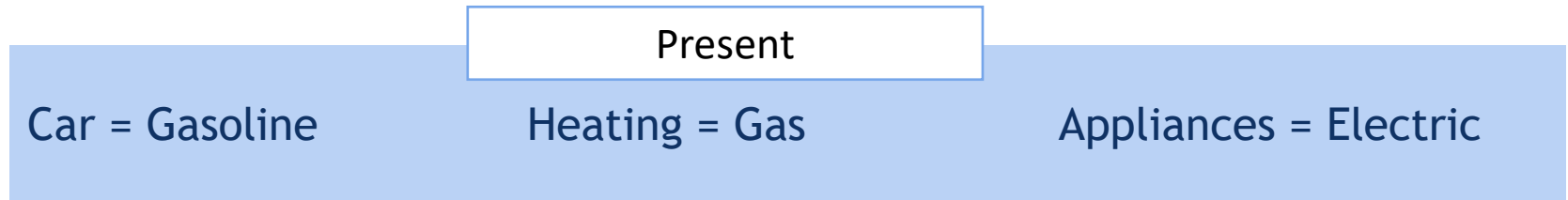
Challenges in local sources of flexibility

29 October 2020

Marcel Willems



Jan Janssen - A typical Dutch guy



Link to video

<https://www.youtube.com/watch?v=0r0ypx59cbw>

6 real-scale Demonstrators in 5 European countries

TRIALOG

accenture

RWTH AACHEN
UNIVERSITY

ENEDIS
L'ELECTRICITE EN RESEAU

e-on
RWTH AACHEN
UNIVERSITY

Swedish Demos

ENEXIS
GROEP

TNO
innovation
for life

Elaadnl

Dutch Demo

German Demo

avacon

ENEDIS
L'ELECTRICITE EN RESEAU

EDF

socomec
Innovative Power Solutions



ENGIE

GRDF
GAS RESEAU
DISTRIBUTION FRANCE

French Demo

NICE SMART VALLEY

Czech
Demo

DISTRIBUCE

ČEZ SOLÁRNÍ

SIEMENS
Ingenuity for life

Schneider
Electric

AIT
AUSTRIAN INSTITUTE
OF TECHNOLOGY

Fronius



ISLANDING



ELECTRIC
VEHICLE



DEMAND
RESPONSE



ENERGY
STORAGE

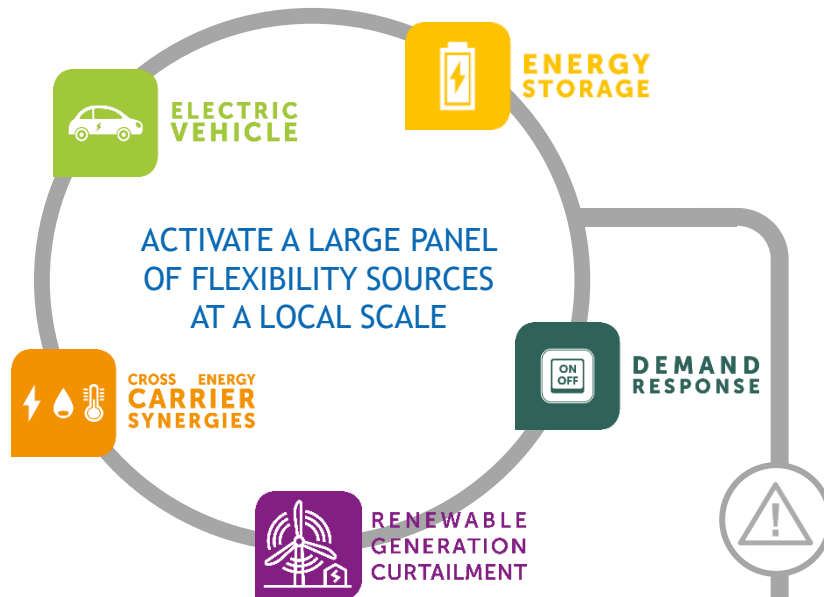


GRID
AUTOMATION



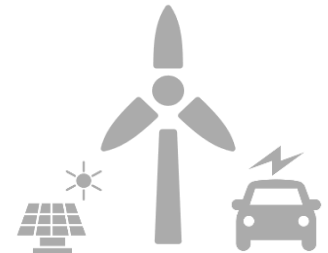
CROSS ENERGY
CARRIER
SYNERGIES

Use of flexibilities on a local scale



InterFlex is a EU-funded H2020 project which aims to optimize the electric power system by investigating the **INTER**actions between **FLEX**ibilities on a local scale.

MANAGE CONSTRAINTS IN THE DISTRIBUTION SYSTEMS IN A COST-EFFECTIVE AND EFFICIENT WAY

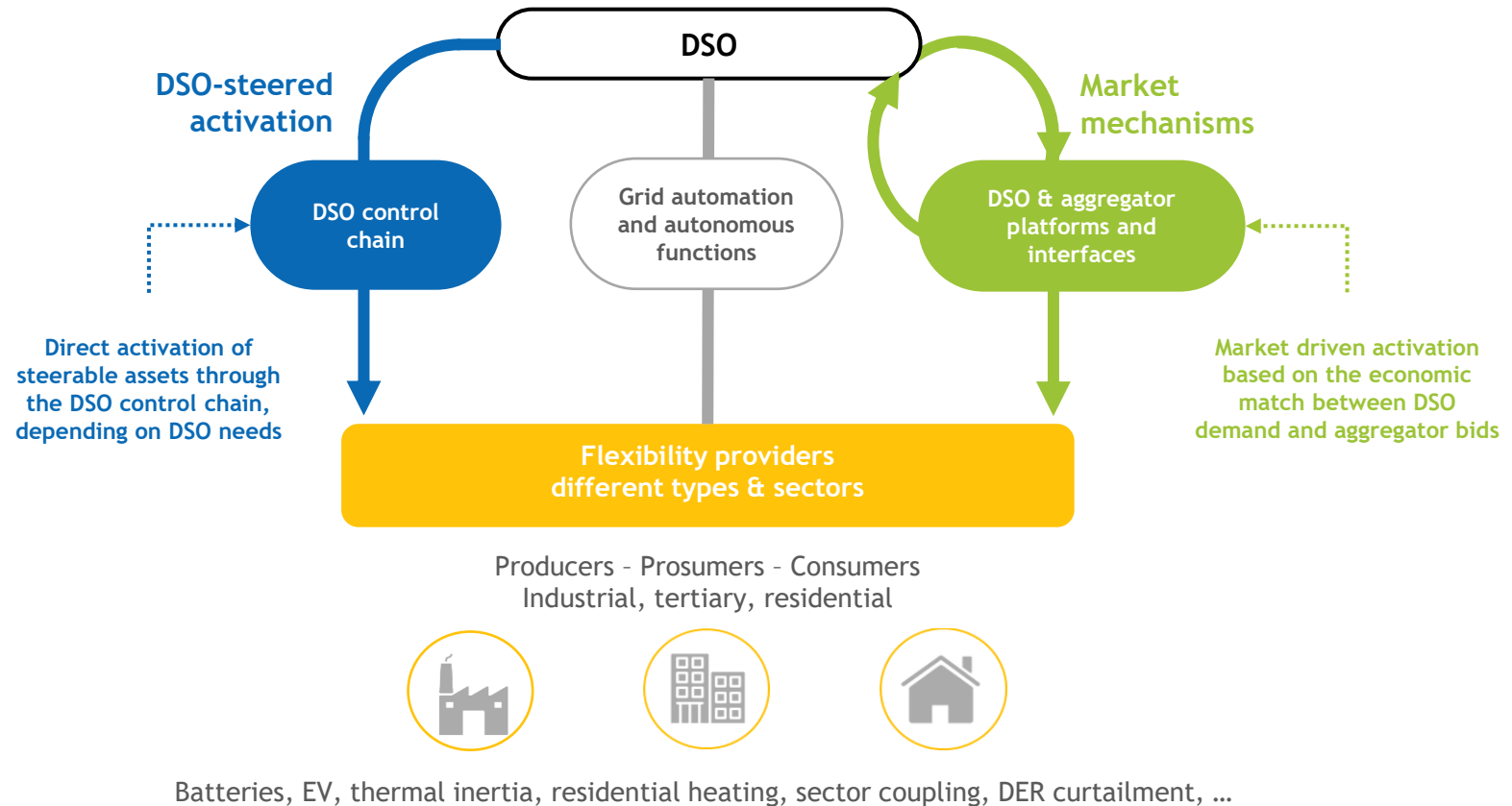


INCREASE THE LOCAL SHARE OF RENEWABLES AND FOSTER THE DEVELOPMENT OF NEW ELECTRIC USES SUCH AS E-MOBILITY

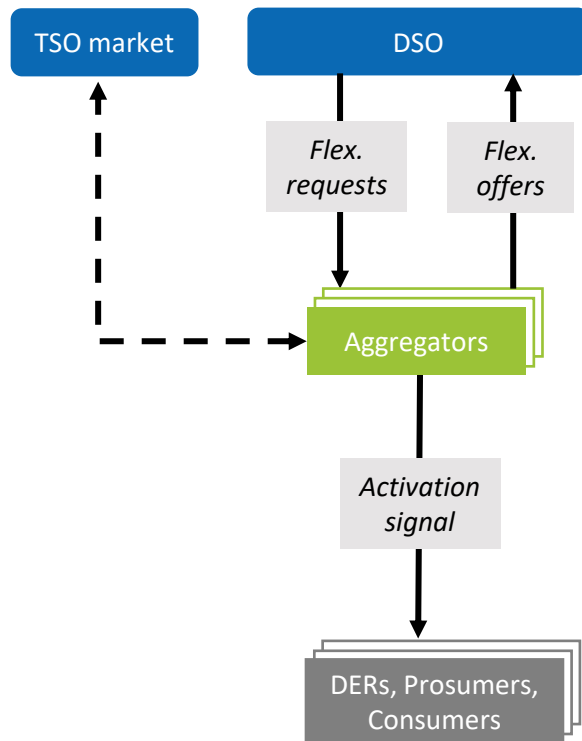
InterFlex investigates different approaches to access and activate local flexibilities

Approaches are complementary - not exclusive

Their choice depends on actual grid congestion, regulation and economic principles



*Today, national flexibility markets are driven by proven TSO mechanisms.
What are the challenges for the DSO to exploit local flexibilities,
and for aggregators to build a viable business case?*



TSO:

- balance responsible

DSO:

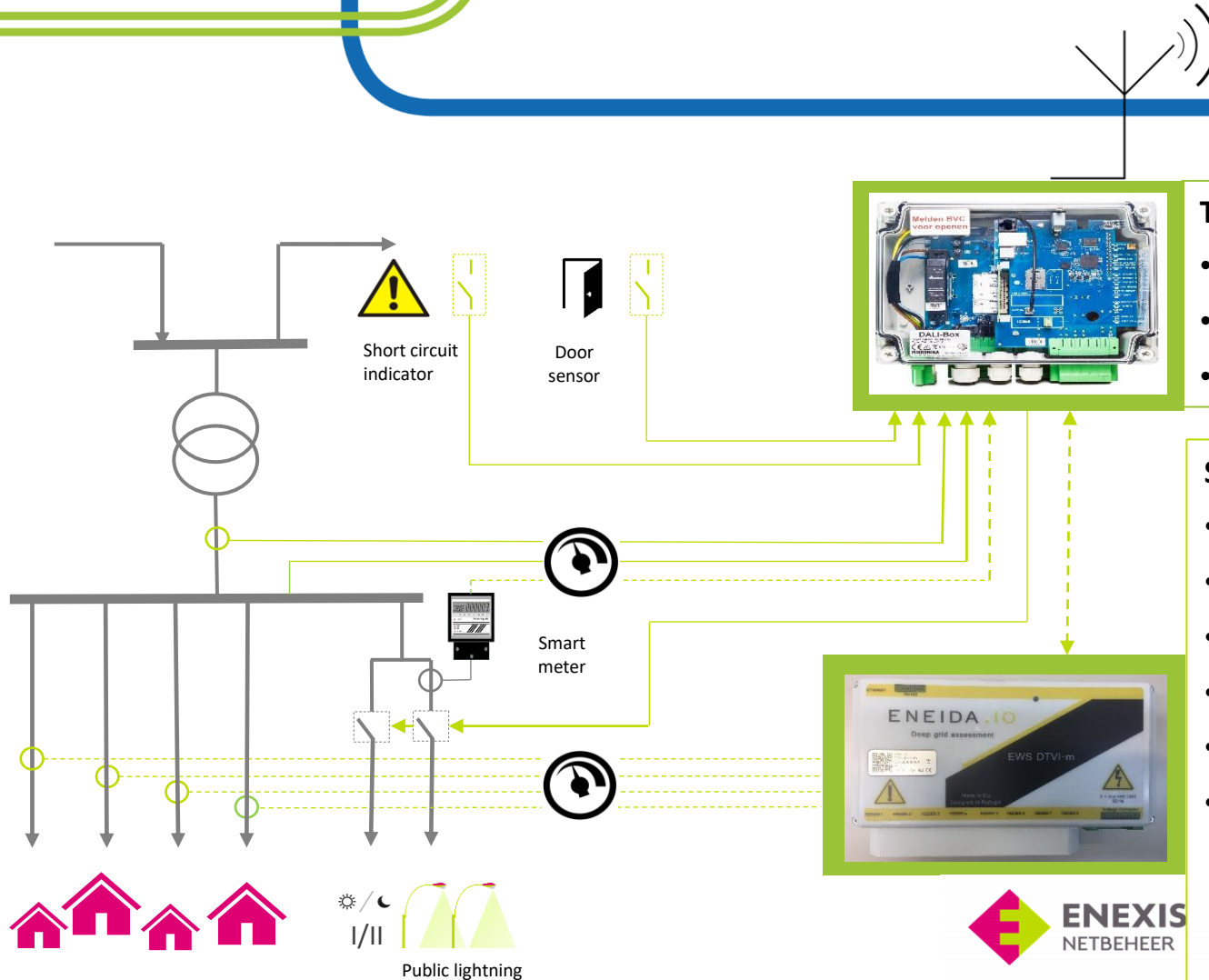
- grid constraint forecast
- flex settlement
- flex requests
- flex offer selection
- service check

Aggregator:

- portfolio optimization
- dispatch and balance
- forecast
- optimization among value pockets & flex offers
- flex activation, arbitrage

DERs, prosumers, consumers:

- flexibility provider



Three data streams:

- Daily max/min
- 15 minutes average values
- Realtime treshholds

Sensor data per phase (optional):

- Current per phase
- Voltage per phase
- Active power per phase
- Reactive power per phase
- THD per phase
- Status reports
 - Front panel (open/close)
 - Door
 - Short circuit
 - System indicators

DaLi devices active:

4482

81,658,115

Readings per day

Januari 2020

944

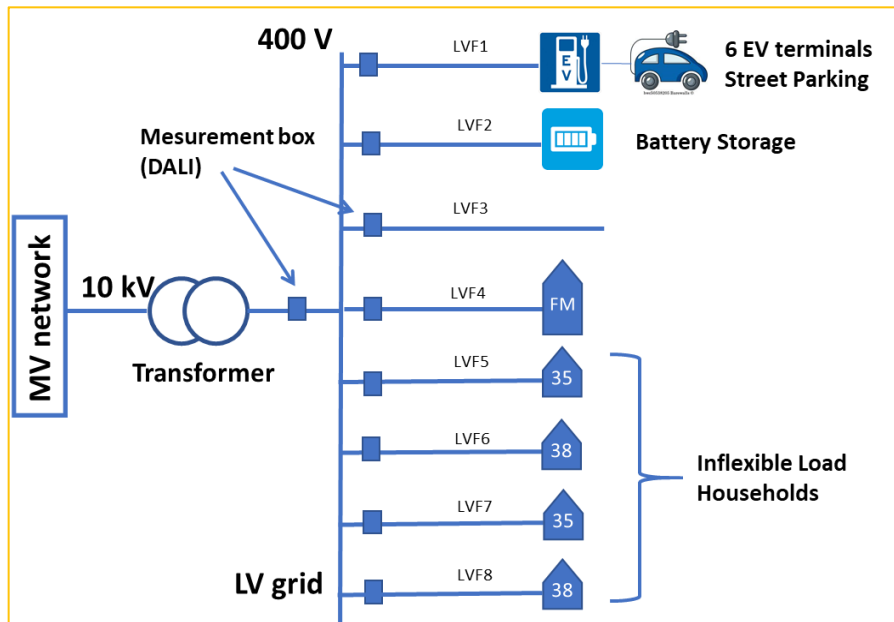
Readings per sec

Average

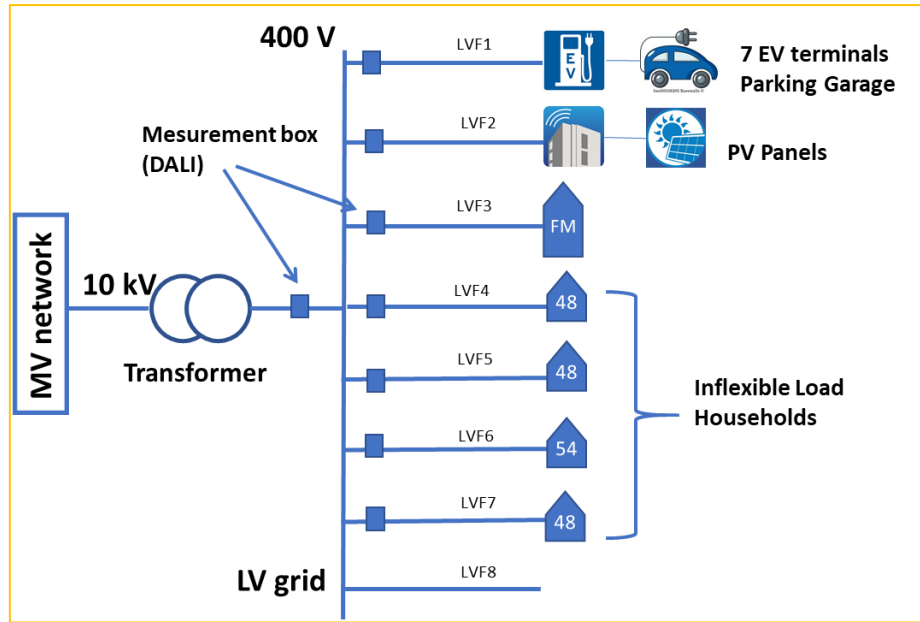
48

New DaLi devices per week

min. 24, max 74



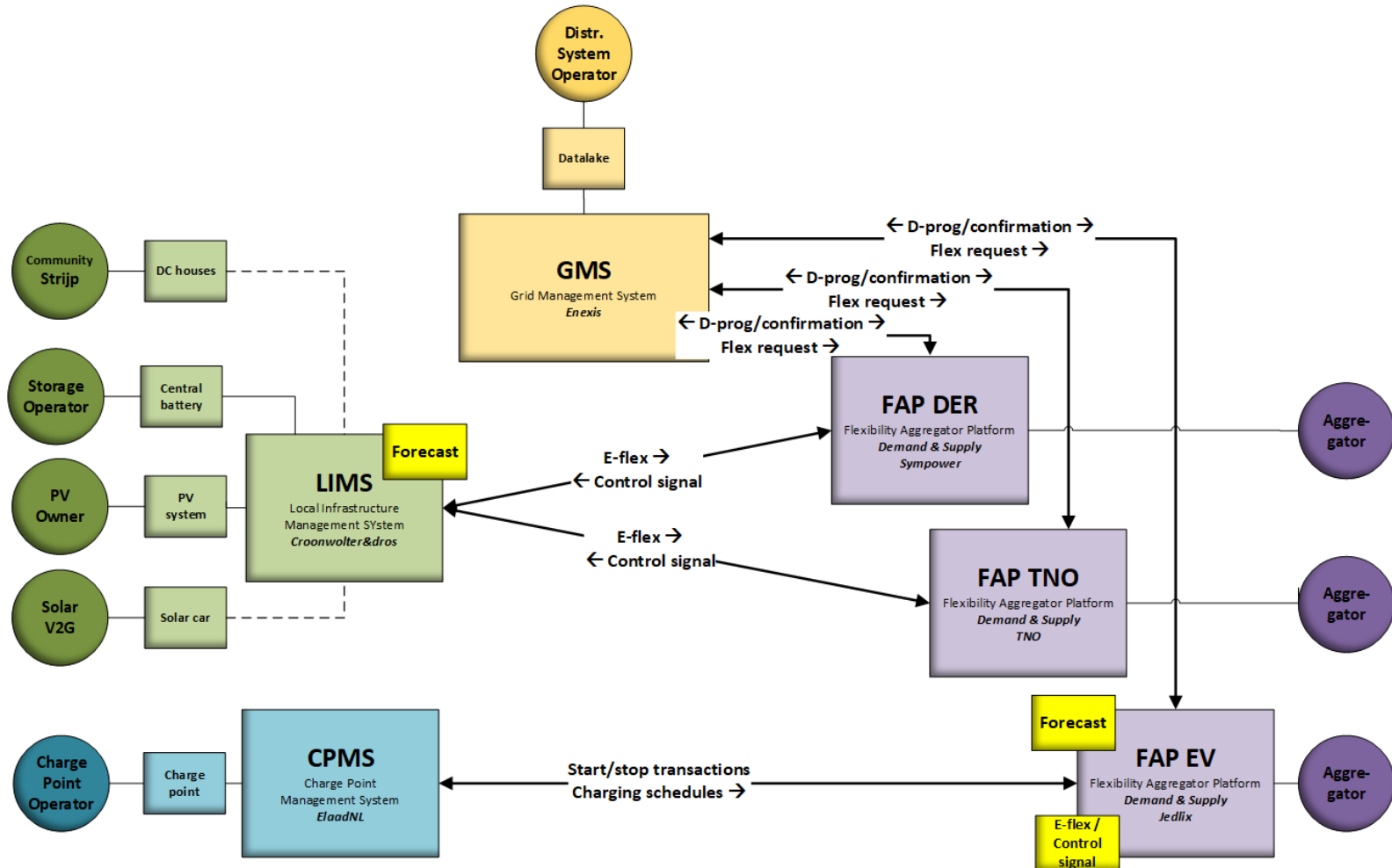
Congestion Point: Battery + EV street

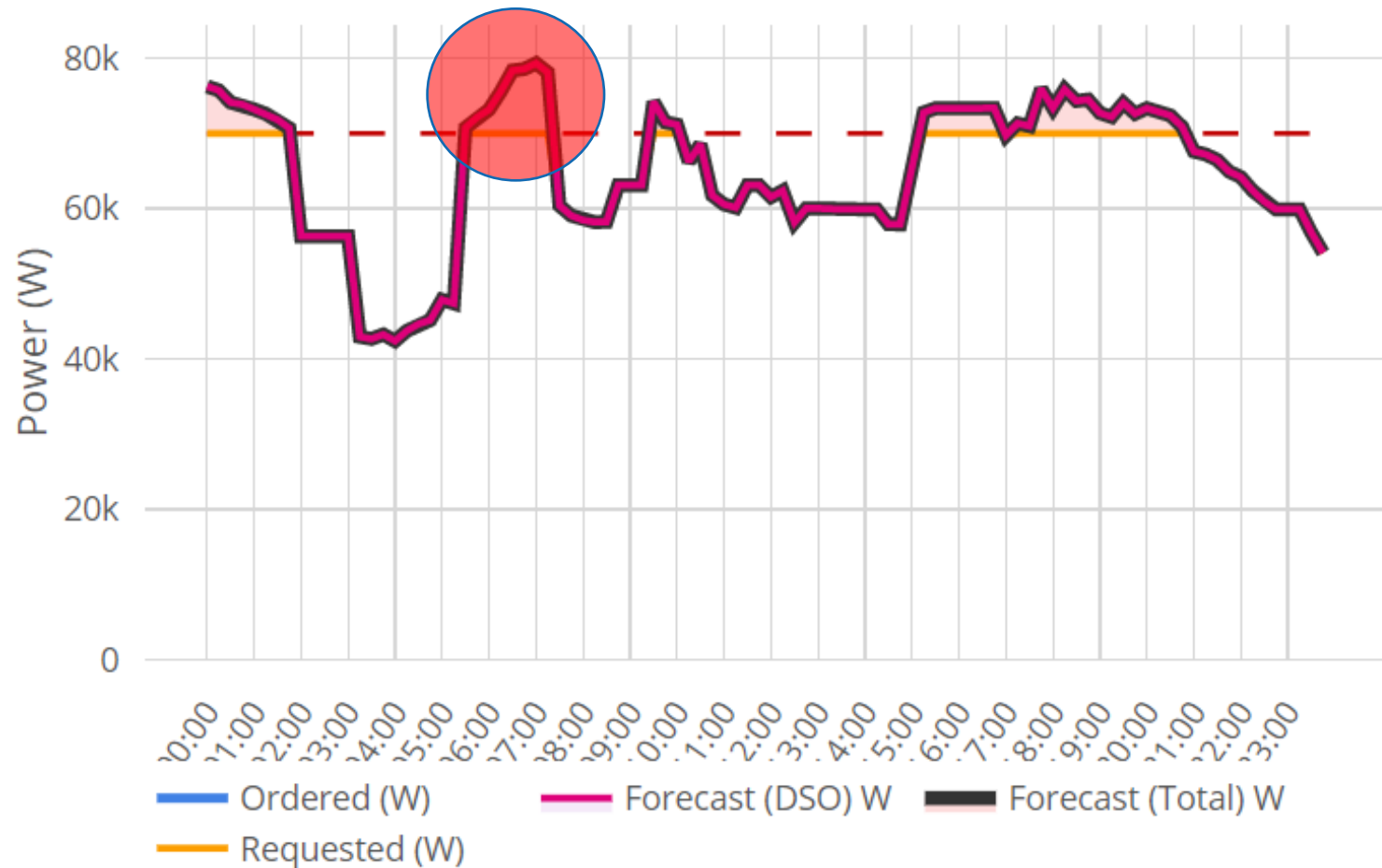


Congestion Point: PV + EV parking



InterFlex NL - roles, systems and communication







Key Recommendations (to think about)



DSO needs:

- Flex in the future to resolve grid constraints on a regional level.
- Standardization of product design and market design on a national level and data to achieve this.
- Intense collaboration with TSO



Key Recommendations (to think about)



DERs, Prosumers, Consumers need:

- Short term market incentive and long term view on the value.
- To know what's in it for them



Key Recommendations (to think about)



- **Aggregator needs:**
 - Standardization and data to offer flex
 - Value stacking to facilitate customer involvement and to get profit
 - Geographical data and clear economic signal



Key Recommendations (to think about)



Keep it simple!

Future

Car = Electric

Heating = Electric

Appliances = Electric



