



How FLEX should the Dutch energy system be?
Five challenges for the grid operator

Marjolein Hulsebosch | Strategy & Innovation



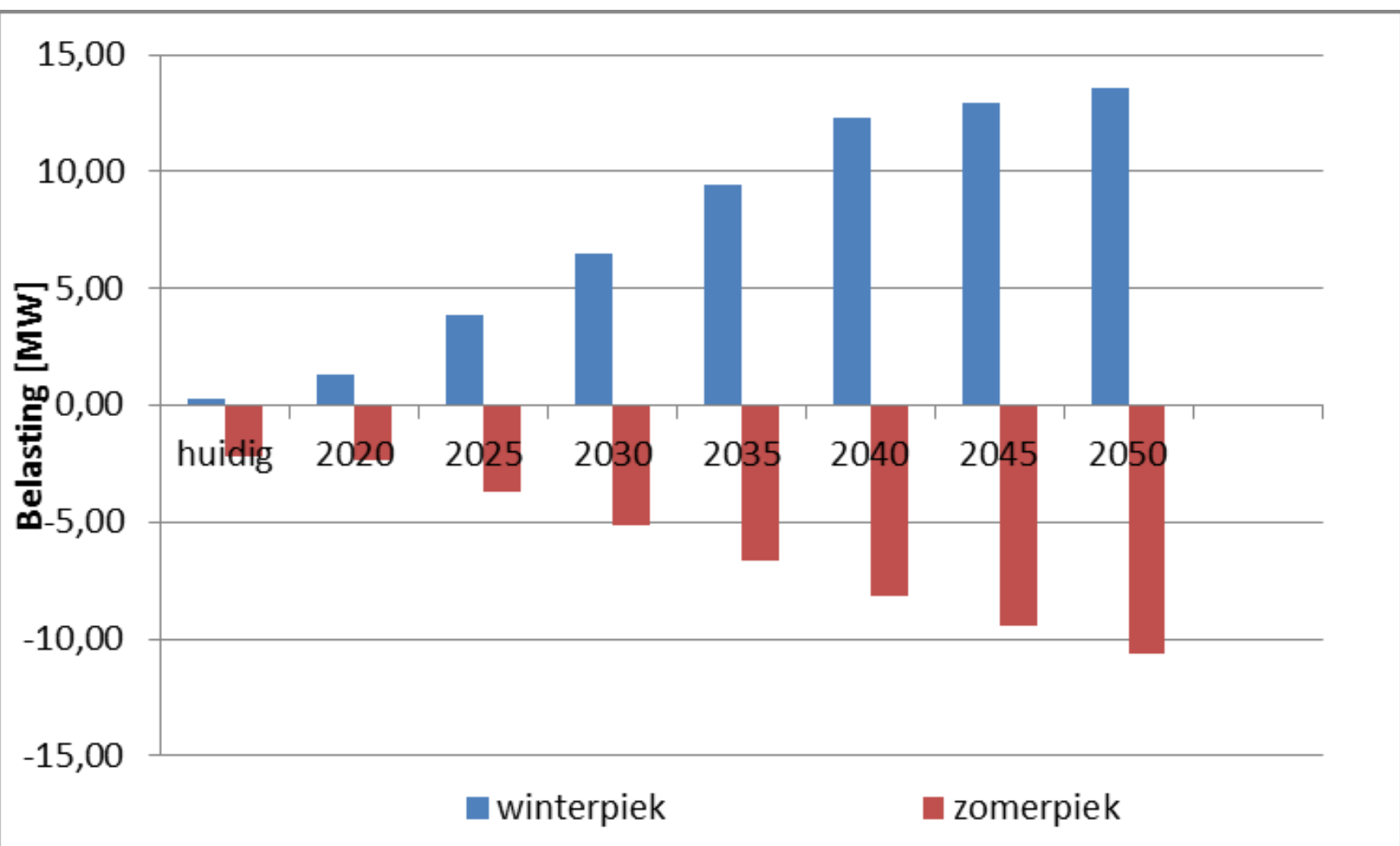
What

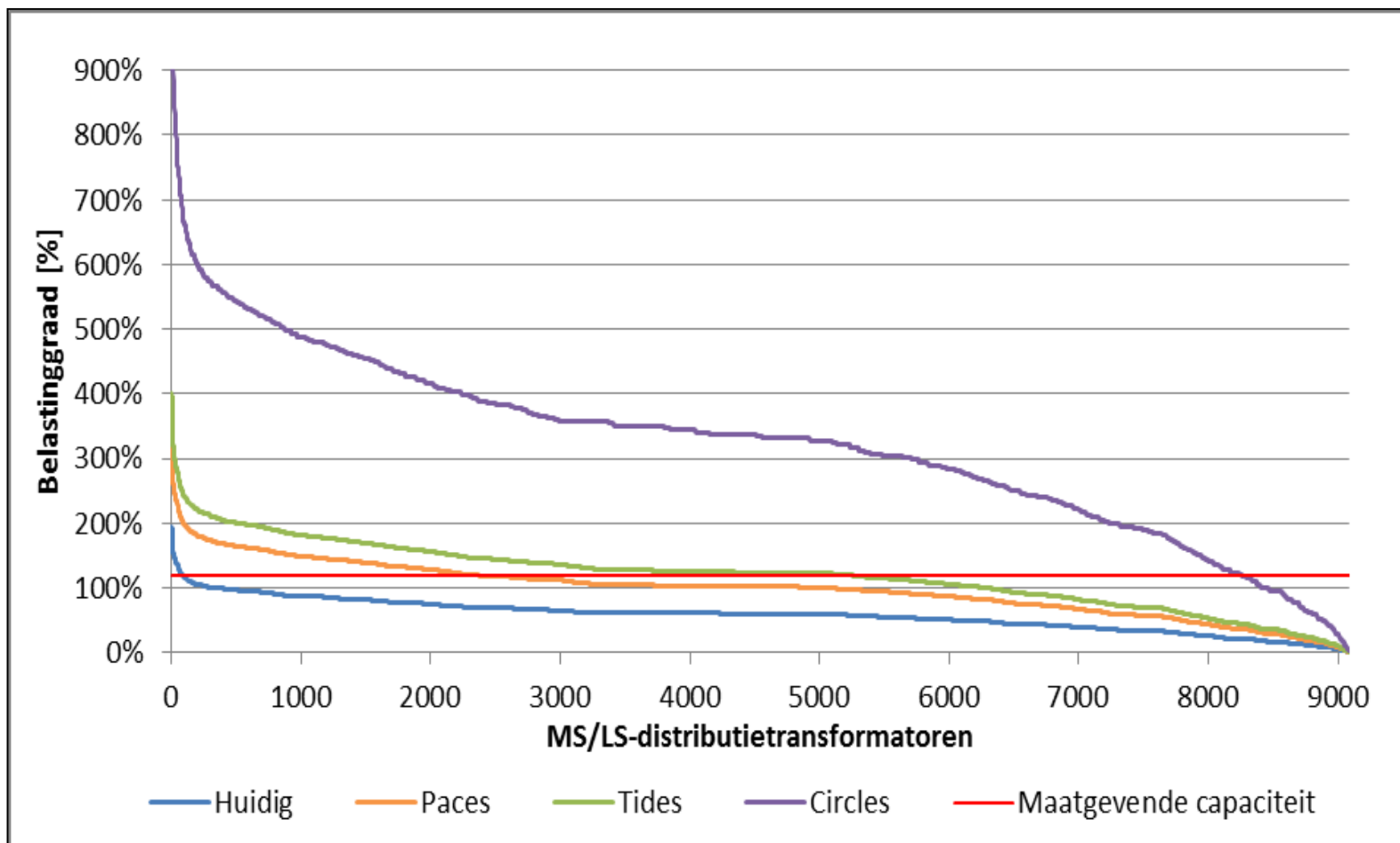
How

Why
flex?



2030: 25% from decentral generation







Rising costs

Changing system dynamics



Generation:
centralized, predictable



Demand:
inelastic

Changing system dynamics

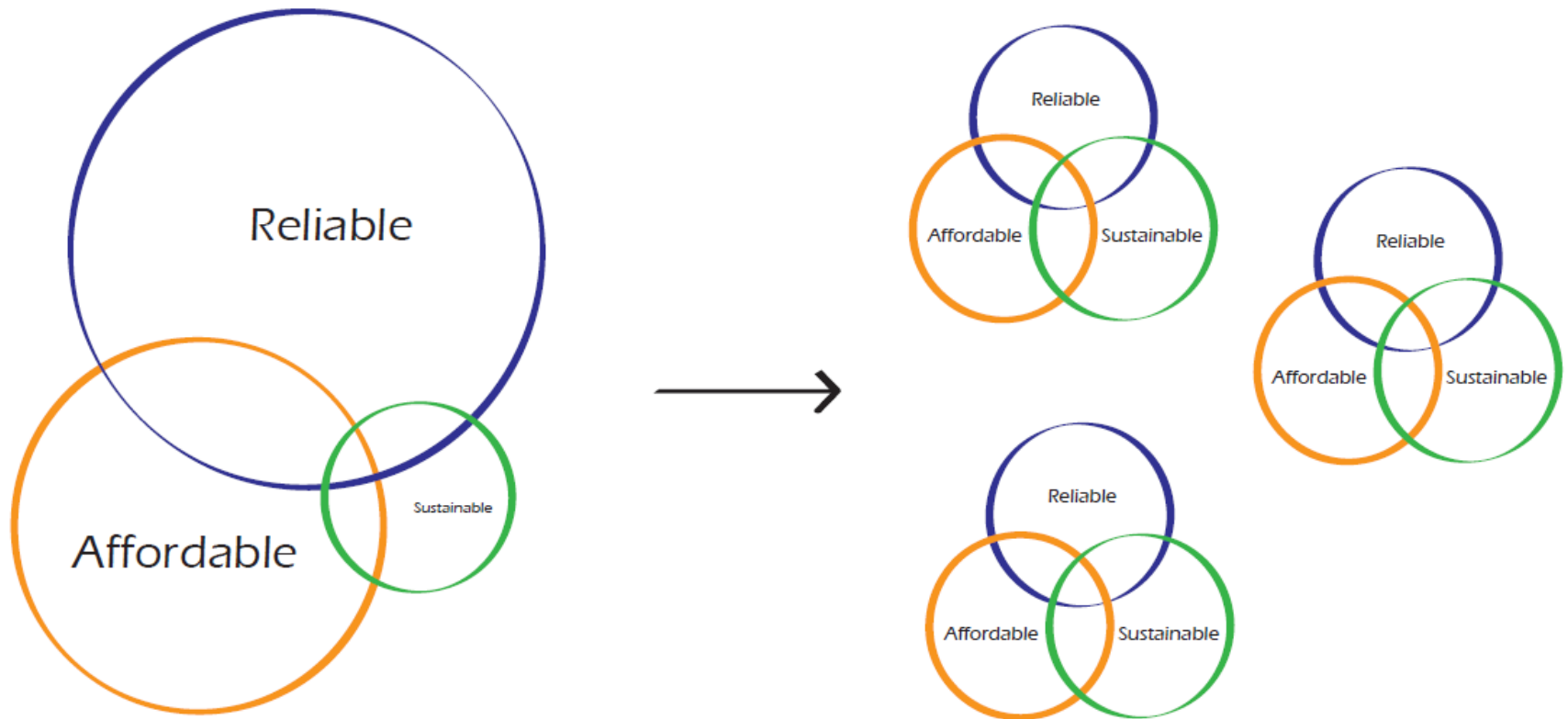


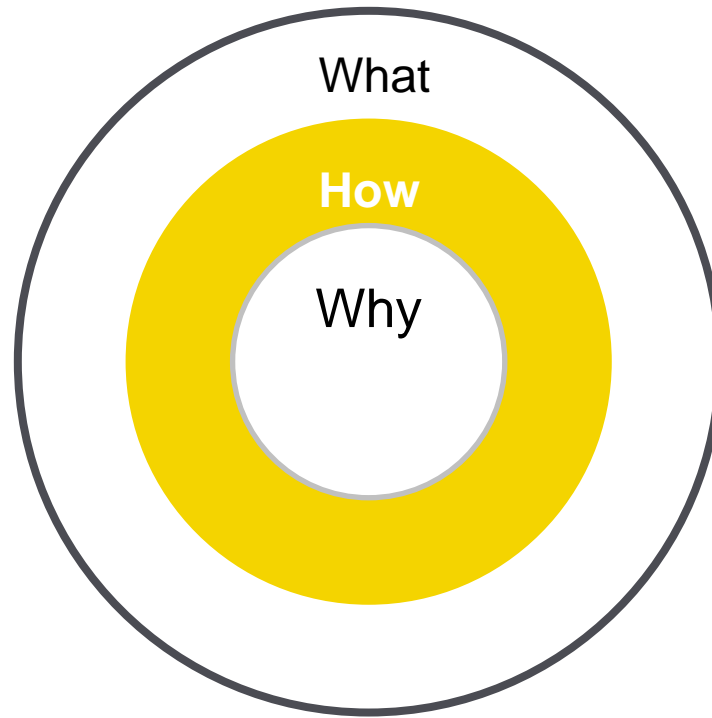
Generation:
decentral, less predictable

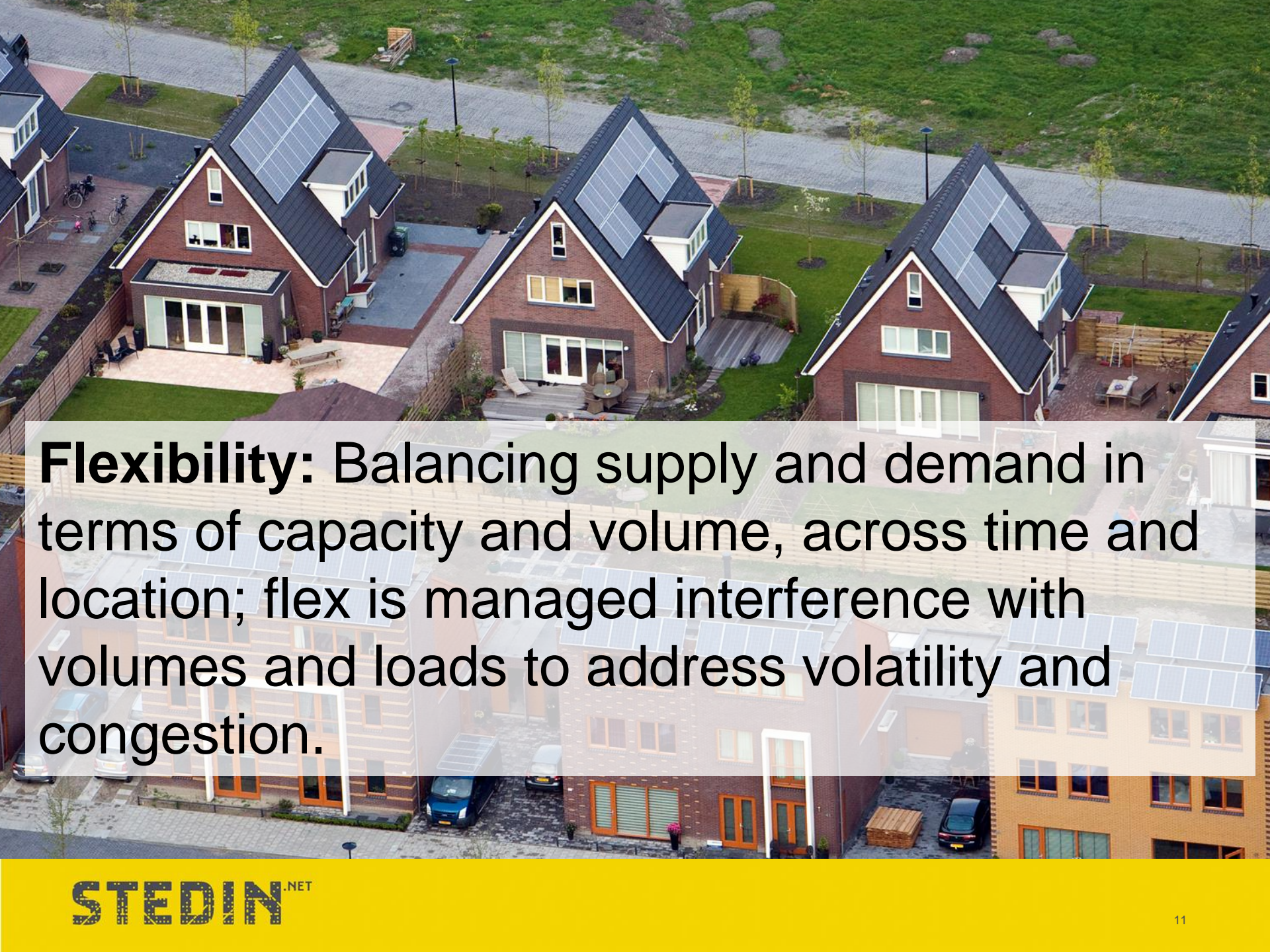


Demand:
elastic, (electrification)

Facilitate energy transition





An aerial photograph of a modern residential neighborhood. Several houses with dark grey gabled roofs are visible, each equipped with a large array of solar panels. The houses have brick or stone facades and large windows. Some have small patios or backyards with green lawns. In the foreground, there's a row of multi-story apartment buildings with orange-brown facades and balconies. A semi-transparent white box with black text is overlaid on the middle of the image.

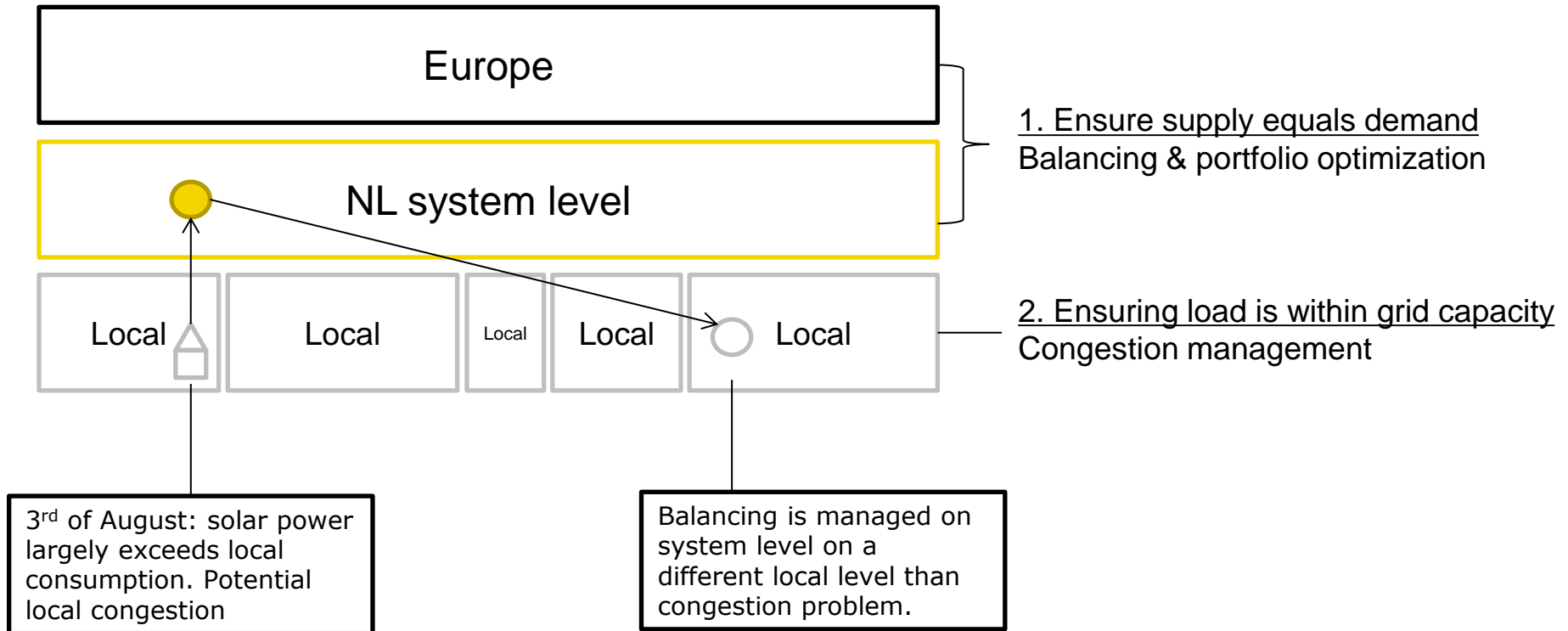
Flexibility: Balancing supply and demand in terms of capacity and volume, across time and location; flex is managed interference with volumes and loads to address volatility and congestion.



3 drivers in the flexibility market:

1. Balancing the system; the need to balance supply and demand
2. Portfolio optimization; the need to manage price risks due to price volatility
3. Congestion management; manage load within grid capacity

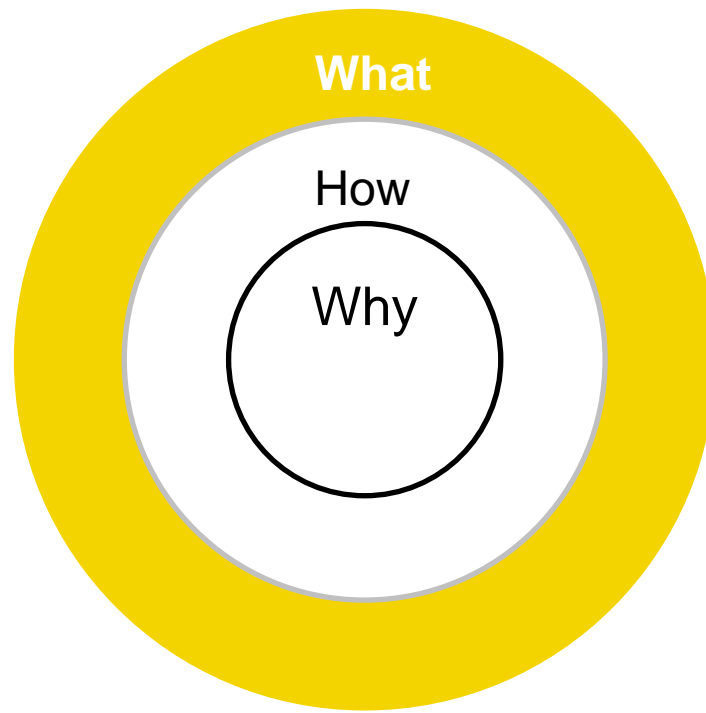
Important control mechanisms



Flexibility Sources

- Demand response
- Energy storage
- Flexible (decentral) power generation
- Or.....a more robust grid

Important: social assessment between buying flexibility services versus costs for grid extension

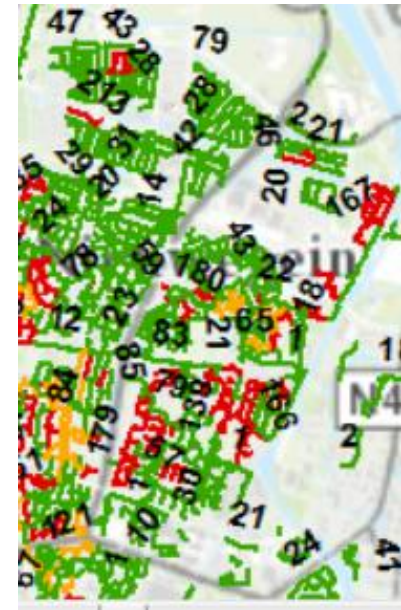
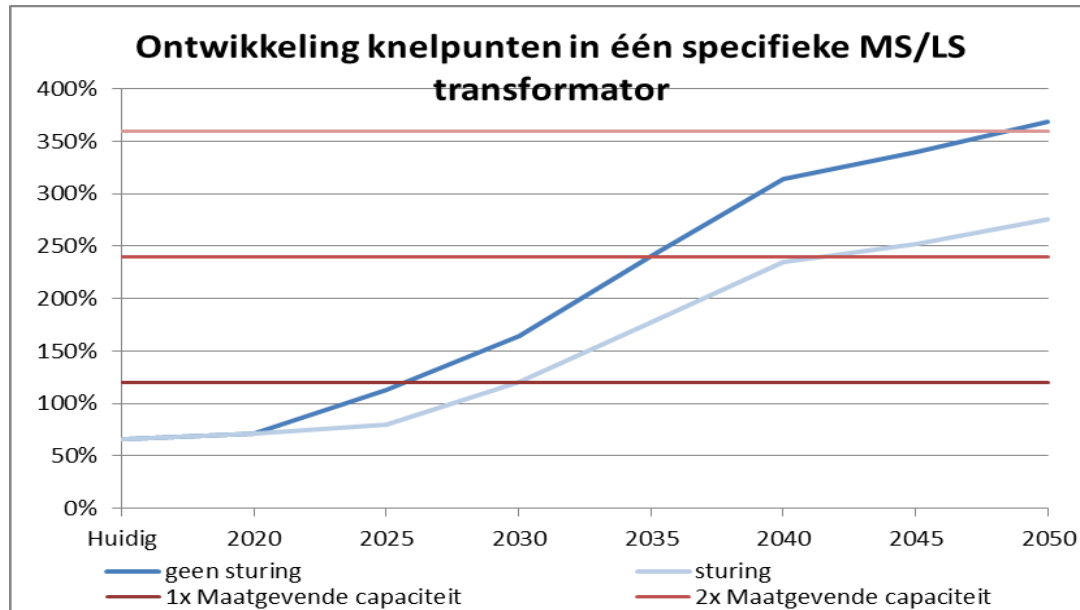


5 key challenges



When and where will congestion occur?

- Infrastructural Footprint; scenario analysis
- Sustainable scenario; congestion on all voltage levels
- Integral perspective needed; energy landscape planning



Regulation - Lobby

Case study – Grower

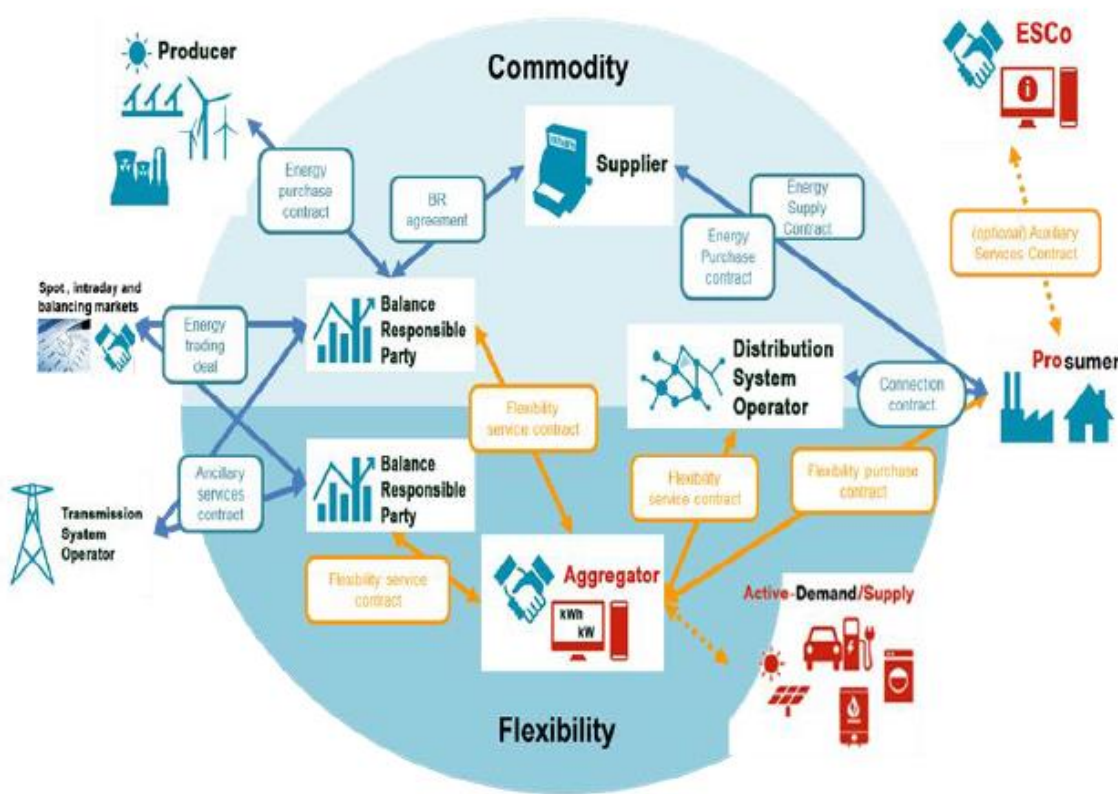
Current tariff system: grower is paying for peak

Potential future system: grower earns money by offering its flexibility.



Changing market model

Aggregator new role to develop



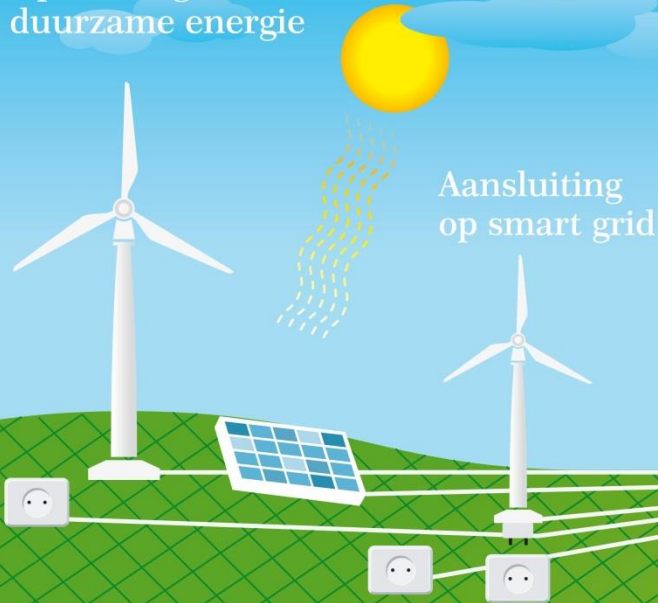
- New role: Aggregator
- Change in merit order?
- Who is in charge?
- What is the role of the DSO?
- Which market will start first?

Types of flex sources

Pilot Couperus

Weergave smart grid

Opwekking
duurzame energie



Aansluiting
op smart grid

Het smart grid
faciliteert het sturen
van vraag & aanbod
door communicatie
met de eindgebruiker

Smart
Grid



Slimme technologie
activeert tijdens
piekaanbod in
duurzame energie



Types of flex sources

Pilot Hoog Dalem

<https://www.youtube.com/watch?v=ZiosvcJ8BjY>

Types of flex sources

Pilot Lomboxnet



Value Flex



Volatility



Congestion

Thanks for your attention!

Contact details: marjolein.hulsebosch@stedin.net