



## ECOGRID 2.0

Emil Mahler Larsen PhD, Dansk Energi

Power Innovation, Energy Crossroads, 15/02/2018

EcoGrid 2.0 is a research and demonstration project funded by EUDP (Energiteknologisk Udviklings- og Demonstrationsprogram).  
The 9 partners in the project are:





INTELLIGENT  
ENERGY



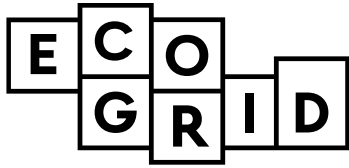
DANISH  
ENERGY ASSOCIATION



DANISH  
ELECTRIC VEHICLE ALLIANCE

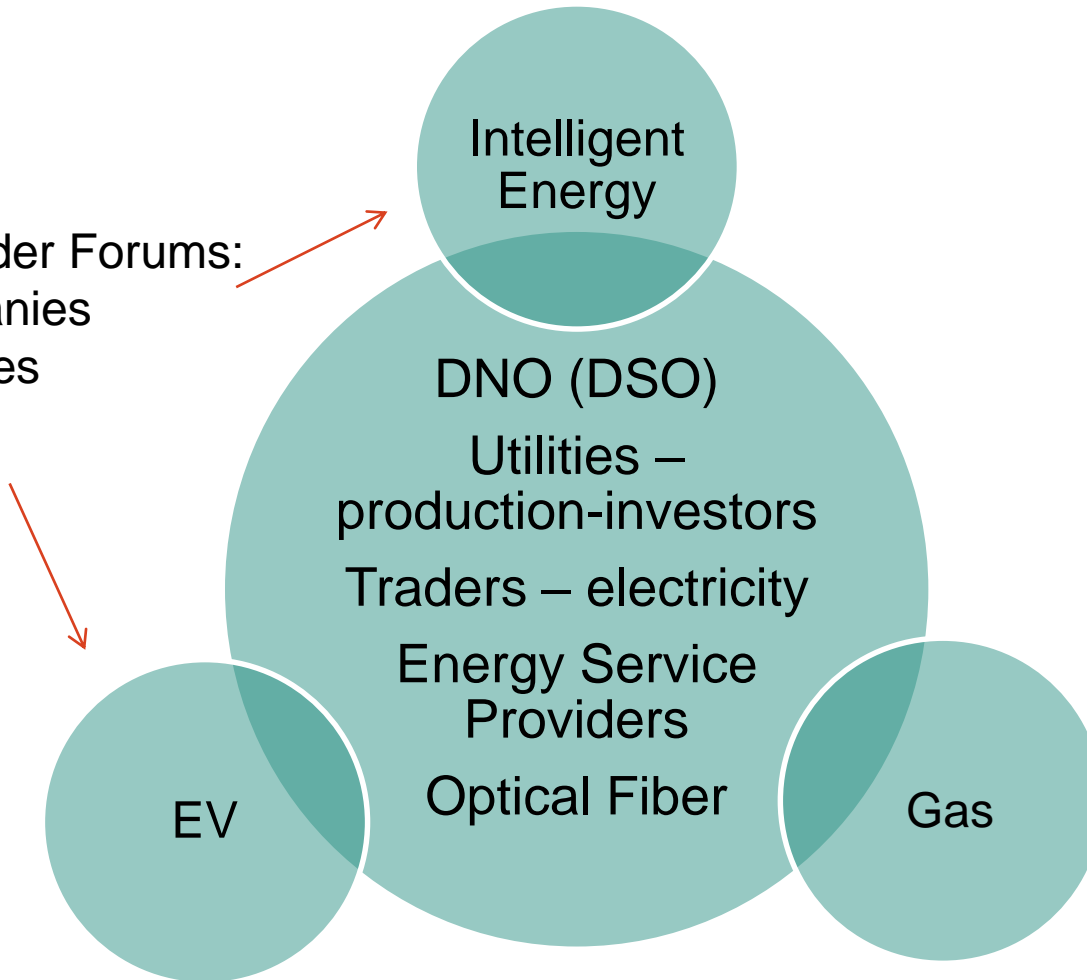


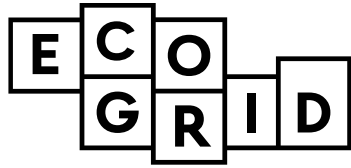
DANISH  
ENERGY ASSOCIATION  
GAS



Broad stakeholder Forums:

- Energy companies
- Tech companies
- Academia



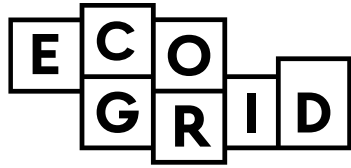


**Video intro:**

**<https://vimeo.com/219810706>**



SMARTER ENERGY



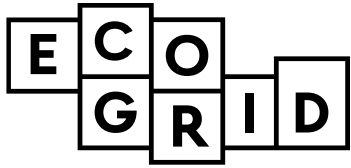
# The World's largest smart grid project (2013)

## Basic details:

Period:	3½ years (January 2016 to June 2019)
Budget:	98 million DKK + 157 million DKK (EcoGrid EU)
Supported by:	EUDP (Danish Energy Agency)
Project leaders:	Dansk Energi

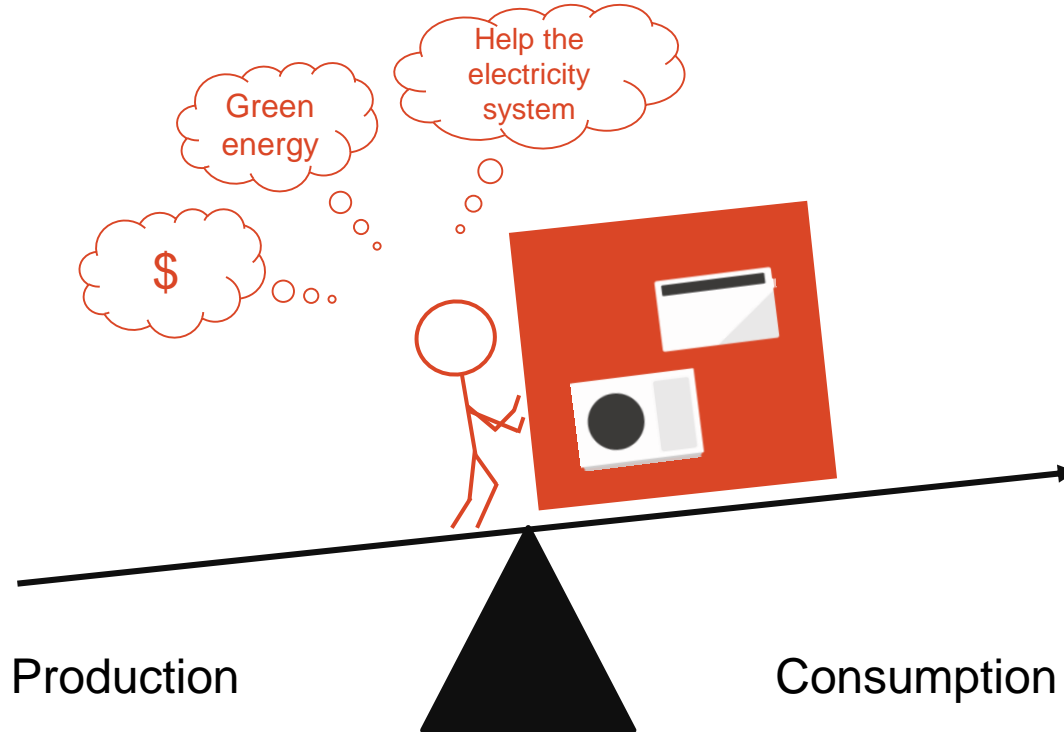
There are 9 participants in the project:

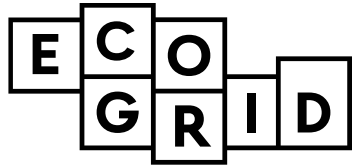




# How do we get consumer's interested?

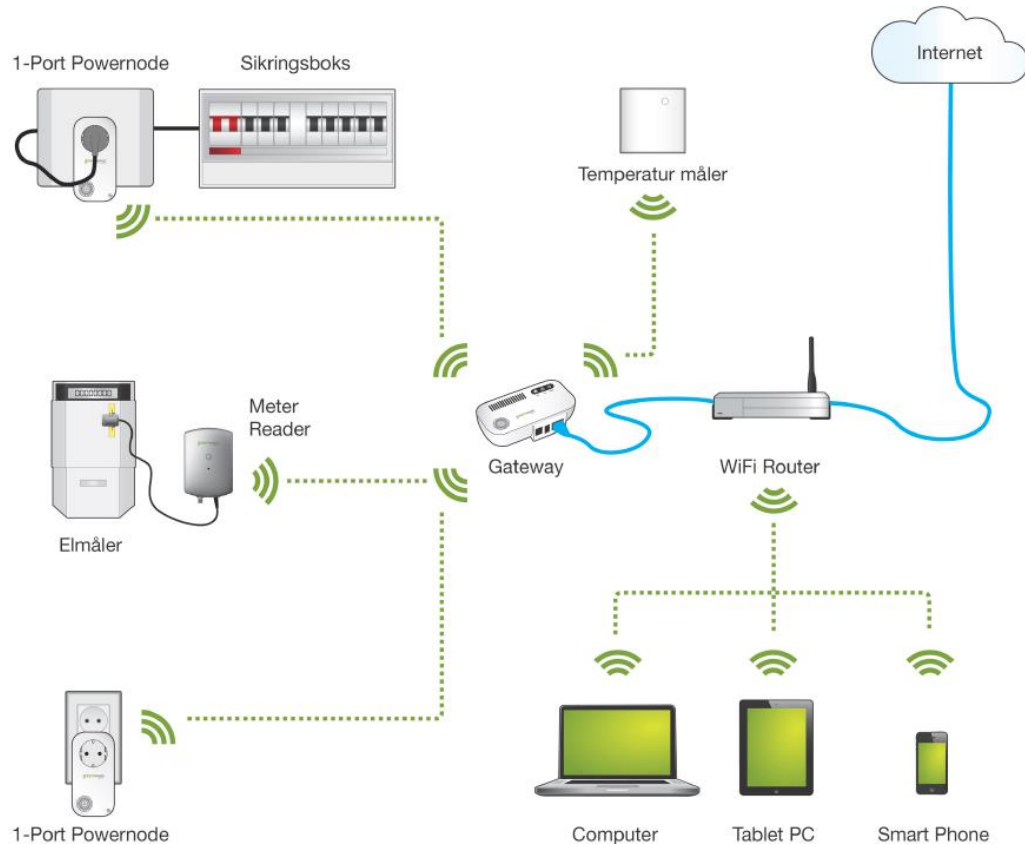
- Consumers don't understand electricity markets or 'demand response'.

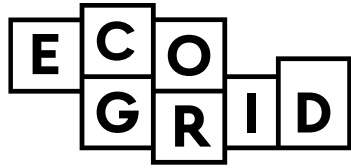




# Aggregators offer consumers hardware and a choice of service

## Styring af elektrisk opvarmning





## Two aggregators each with three services in our experiment

- You can choose between IBM and Inero as your aggregator.
- You can choose between three services:



### **Cashcare**

Lowest energy  
cost



### **Terracare**

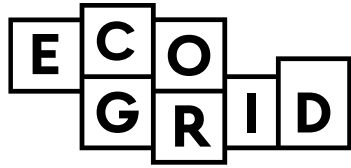
Lowest CO2  
emissions



### **Collectivecare**

Forums, community  
objectives

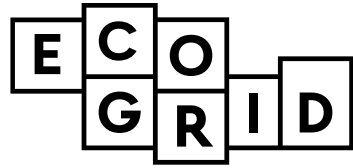




# Cashcare (Sparepakken)



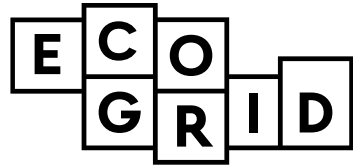
- Motivational factor: Money saving
- Opt-out 12 hours
- Inform users of money saved and kWh used for a lower price
- Inform users if a variable or fixed-rate contract is best for them
- Nighttime optimization
- Benchmarking (compare saved money to other households)



## Terracare (Miljøpakken)



- Motivational factor: Environmentally friendly
- Opt-out 24 hours
- Inform users of how much they helped decrease CO<sub>2</sub> emissions
- Nighttime optimization
- Benchmarking (compare saved CO<sub>2</sub> to other households)

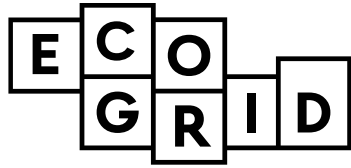


## Collectivecare (Fællesskabspakken)



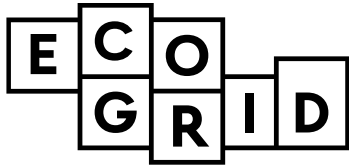
Fællesskabspakken

- Motivational factor: Community solidarity
- No opt-out option
- Part of a closed Facebook group
- Inform users of the communal money saved and CO<sub>2</sub> reductions
- Benchmarking (community reductions compared to other products)

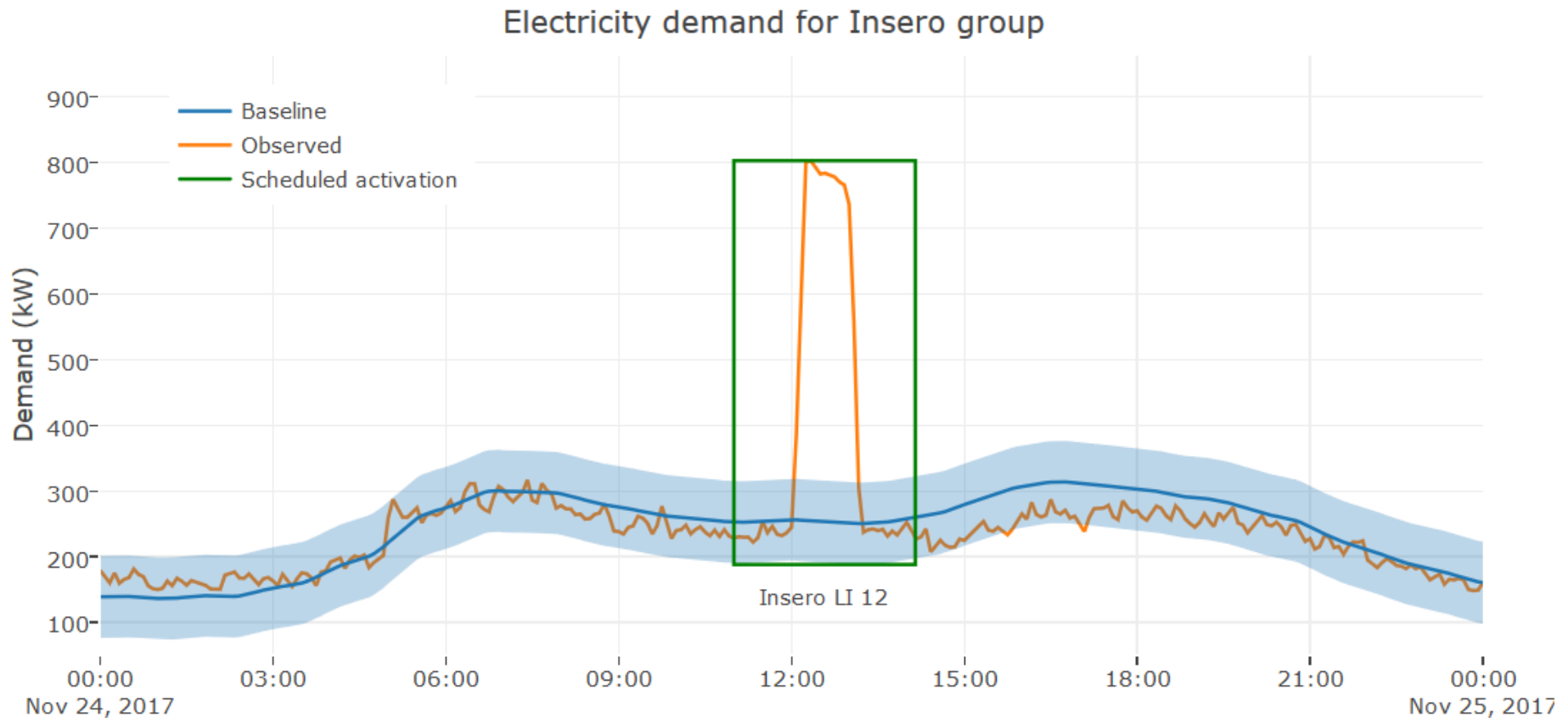


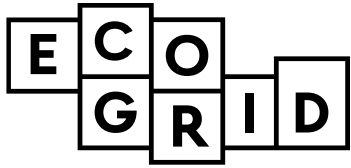
## How does the aggregator make money?

- The aggregator trades your flexibility in the electricity markets.
- Flexibility (demand response) is the ability to move your electricity consumption according to the power grid's needs. These grid needs will triple by 2035 as renewables take a bigger market share.
- Additional business model elements could be for the aggregator to sell you heat, or a service agreement for existing heat pumps.

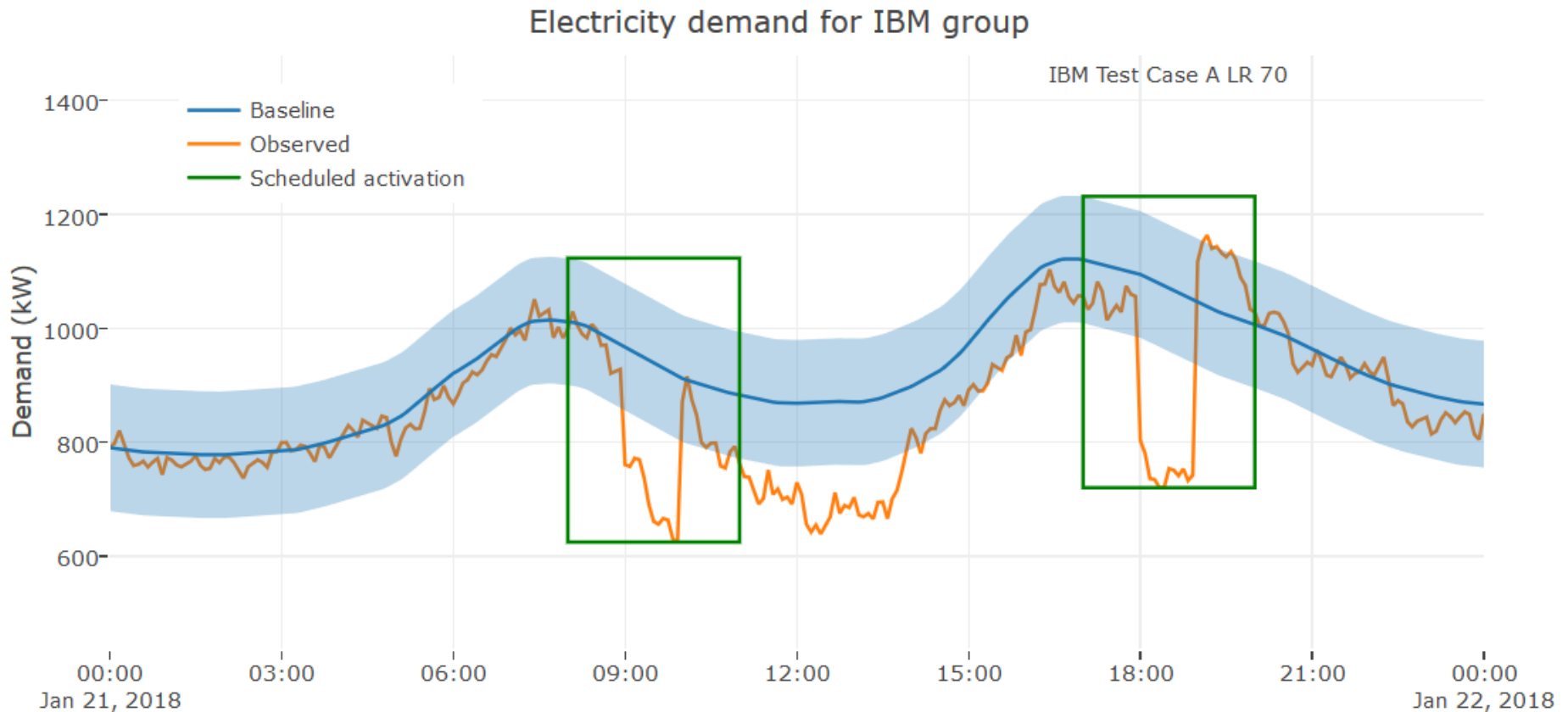


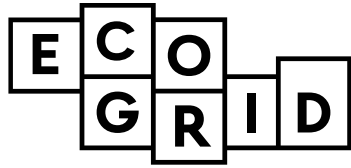
# Trading energy in the wholesale market: the best load increase tests ever seen





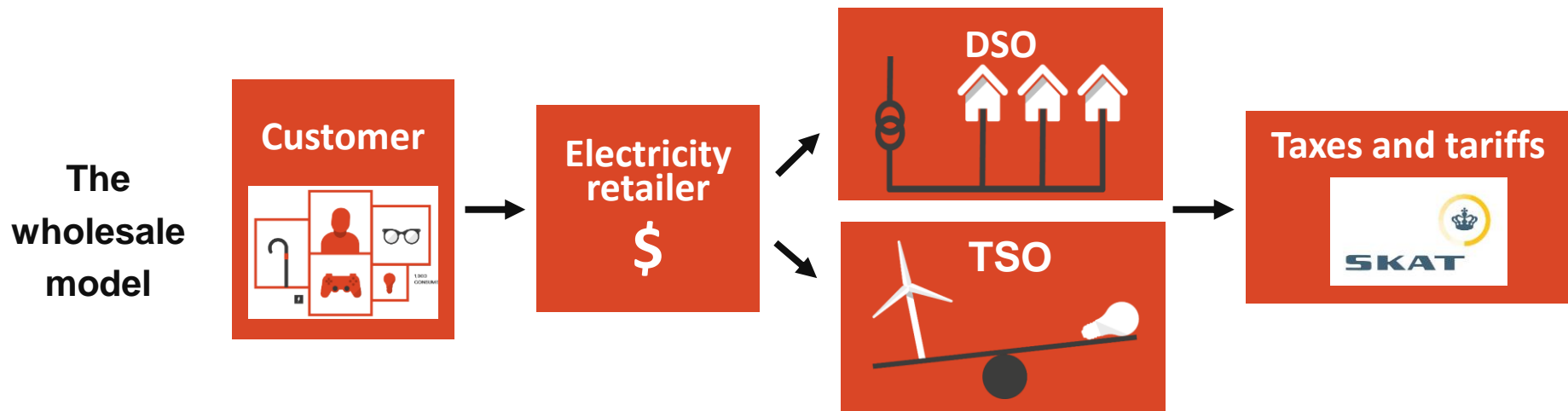
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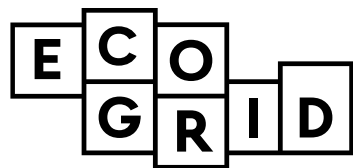




# The EcoGrid Endgame is to continue on commercial terms

- We have just added 400MW of heat pumps in Horsens.
  - We are adding EVs in 2019.
  - BRPs want to trade our flexibility.
  - Everyone will have smart meters by 2020.
- 
- We have proposed a market structure that is compliant with the wholesale model implemented in 2016.





Want to know more?



## Links:

EcoGrid 2.0: <http://ecogrid.dk/>

LinkedIn: **EcoGrid 2.0**

Follow the wholesale market tests:

[www.electricitybaseline.com](http://www.electricitybaseline.com)

