

# MAKING-CITY Webinar 2\_PED TECHNOLOGIES SELECTION

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Municipality of Groningen and TNO  
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# AGENDA

- ▶ General description of the PED area
- ▶ Conceptual Design of PED Technologies
- ▶ Heatmatcher/ESDL/ESSIM highlighted
- ▶ Replication Potential of PED Technologies

# General description of the PED

- ▶ PED Framework / Definition
- ▶ PED Concept Boundary Identification
- ▶ Barriers / Enablers for PED Implementation

# PED Framework / Definition

- ▶ Energy positive on building related energy consumption

# General description of the PED

- ▶ PED Framework / Definition
- ▶ **PED Concept Boundary Identification**
- ▶ Barriers / Enablers for PED Implementation

# PED Concept Boundary Identification



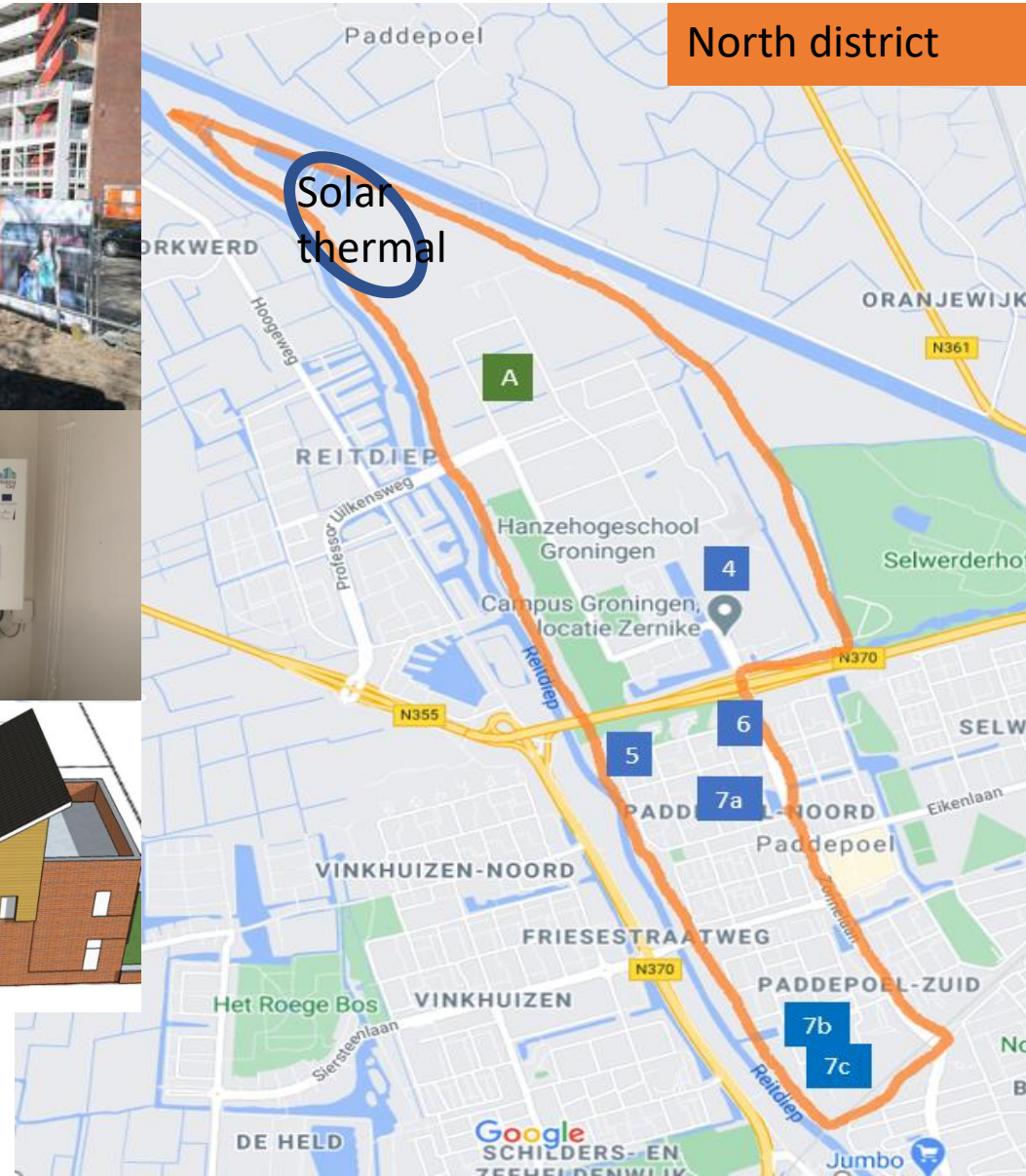
# PED Concept Boundary Identification



# PED Concept Boundaries



Making  
City



# General description of the PED

- ▶ PED Framework / Definition
- ▶ PED Concept Boundary Identification
- ▶ Barriers / Enablers for PED Implementation

# AGENDA

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- ▶ **Conceptual Design of PED Technologies**
- ▶ Replication Potential of PED Technologies

# Conceptual Design of PED Technologies

## ▶ Area selection

- Heat supply is most dominant factor
- Potential to generate RES is the PED area
- Building typology and age (degree of insulation or potential for insulation)

## ▶ Technical feasibility

- Brainstorming sessions
- Selection of technologies
- Technical implications, on the spot, local and beyond
- Financial calculations/solid business case
- Local participation

## ▶ Implementation

- Funding
- Participation and communication
- Permits and procedures



# Barriers / Enablers for PED Implementation

## ► Barriers (lots)

- Technical
- Infrastructural
- Financial
- Participation
- Legal

## ► Enablers

- Political willingness
- Local participation
- Geographical boundaries and available space
- Building typology and density
- Funding

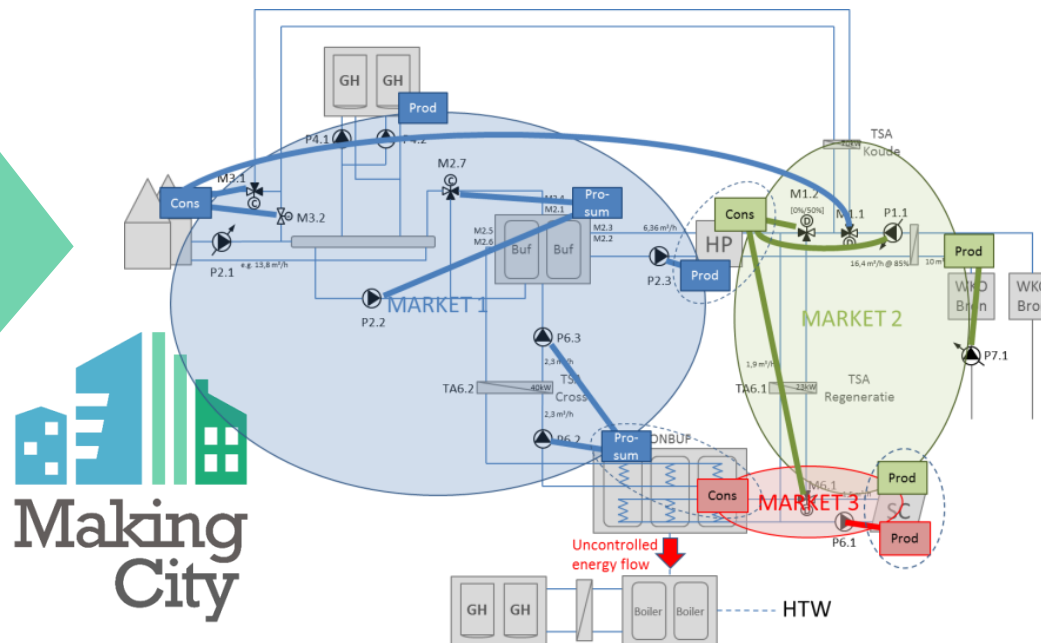
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# HeatMatcher



- ▶ Match heating and cooling supply and demand
- ▶ Maximize use of renewable energy sources
- ▶ Virtual market mechanism
- ▶ Optimizes energy flow, (not temperatures)



# HeatMatcher



- ▶ Positive results in various **field studies**



Apartments  
**18% savings (€)**



Mix of buildings  
**-12% gas required**



Office building

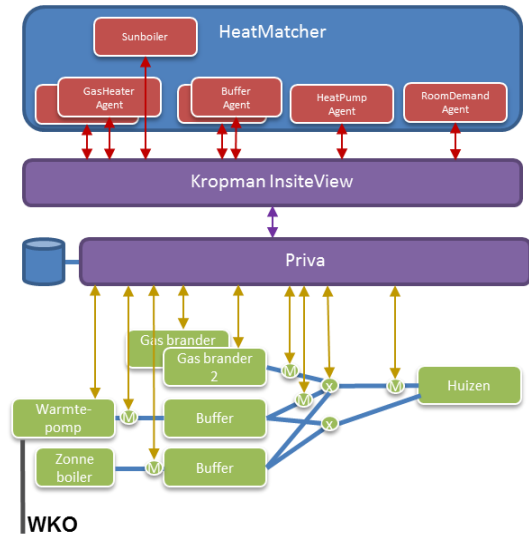


Apartments  
**-27% gas required**

# HeatMatcher



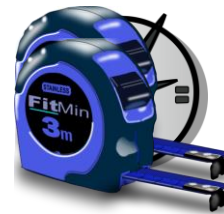
## BUILDINGS



Multiple  
stakeholders

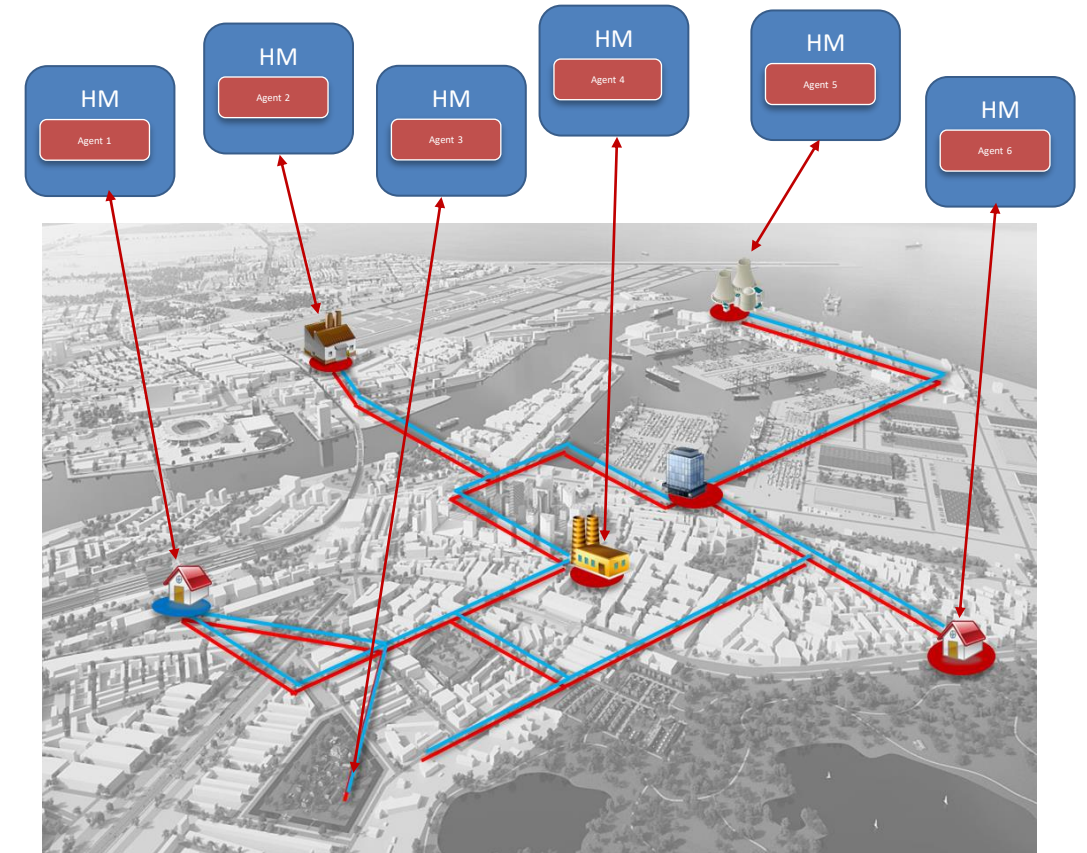


Real money



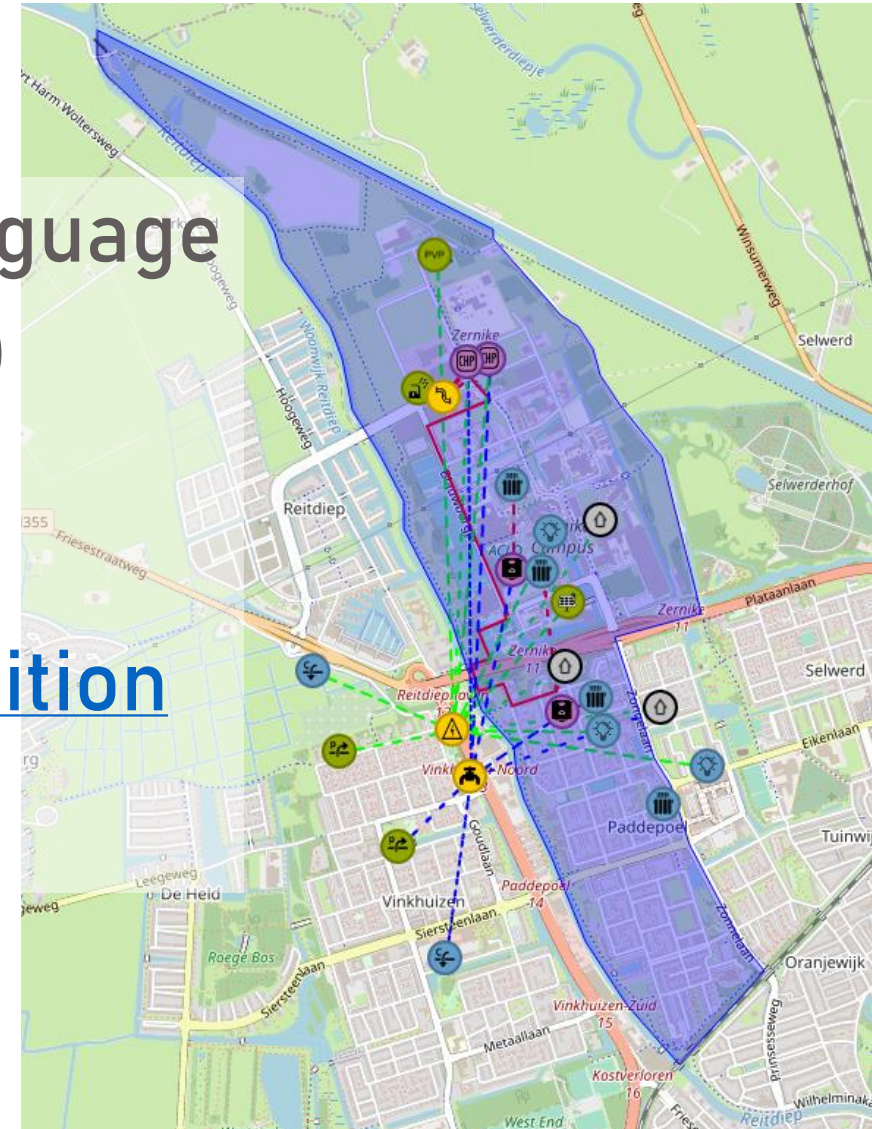
Delays and losses

## NETWORKS



# ESDL

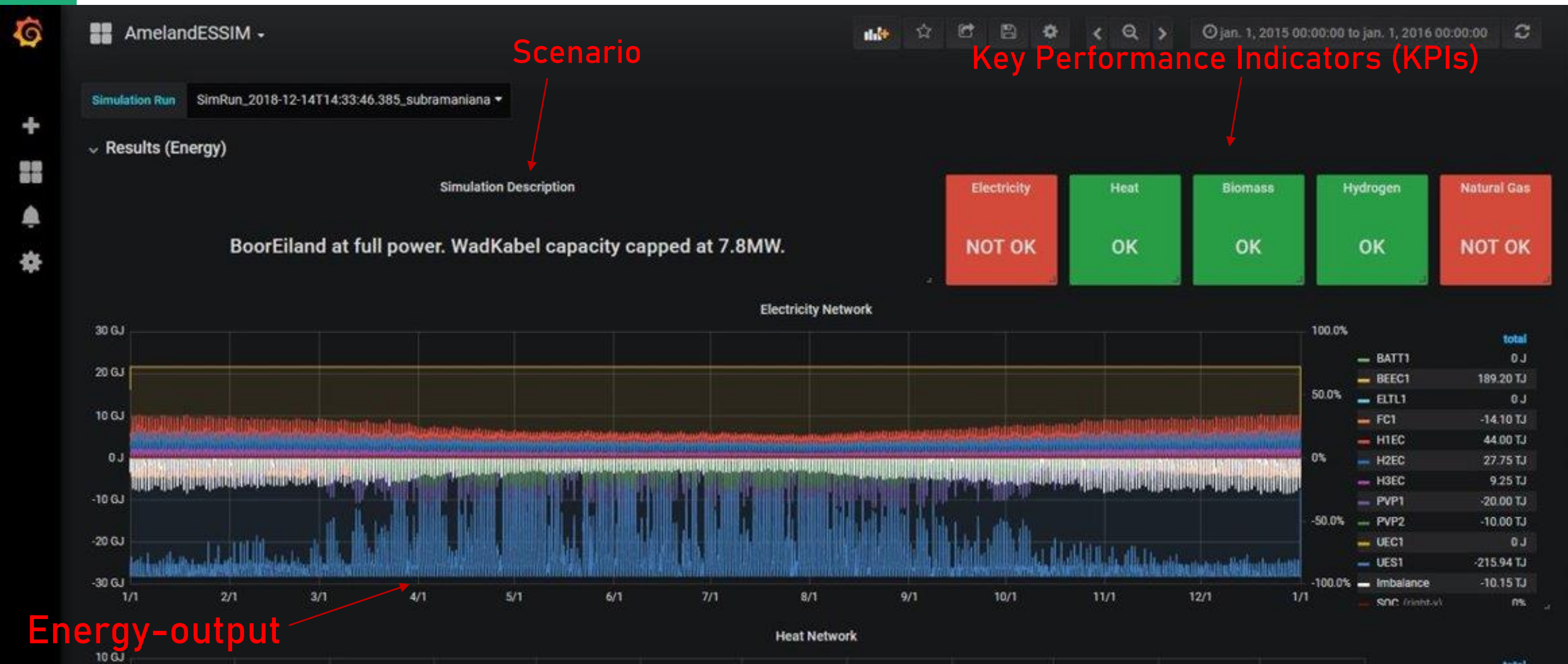
- ▶ Energy System Description Language
- ▶ Generic modelling format (XML)
- ▶ Standardized input / output for Java and Python tools
- ▶ <https://github.com/EnergyTransition>
- ▶ Visual editing on map editor



# ESSIM

- ▶ Simulate behaviour of systems over time
- ▶ Energy balance based on demand and response
- ▶ Interactions between energy carriers
- ▶ Load on transport infrastructures
- ▶ Impact of storage

# ESSIM



# ESSIM

► Start the [live demo](#)



# Replication Potential of PED Technologies

- ▶ Don't strive for a Positive Energy City
  - ▶ Don't aim at making single buildings energy positive
  - ▶ Seek for those areas that have
    - available land
    - a good combination of new build vs existing stock
    - The potential to generate heat locally
- Always cooperate with local representatives
- Pay attention to social inequality regarding the energy transition



# Thank you

## Get in touch for more information!



XXXX  
XXXXXX@XXXXXX



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MAKING CITY website: [www.makingcity.eu](http://www.makingcity.eu)  
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