
An “Energiewende” Field Test

– First Impressions, Proposals and Results

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Initial Position

- The “Energiewende” as Driver of Change

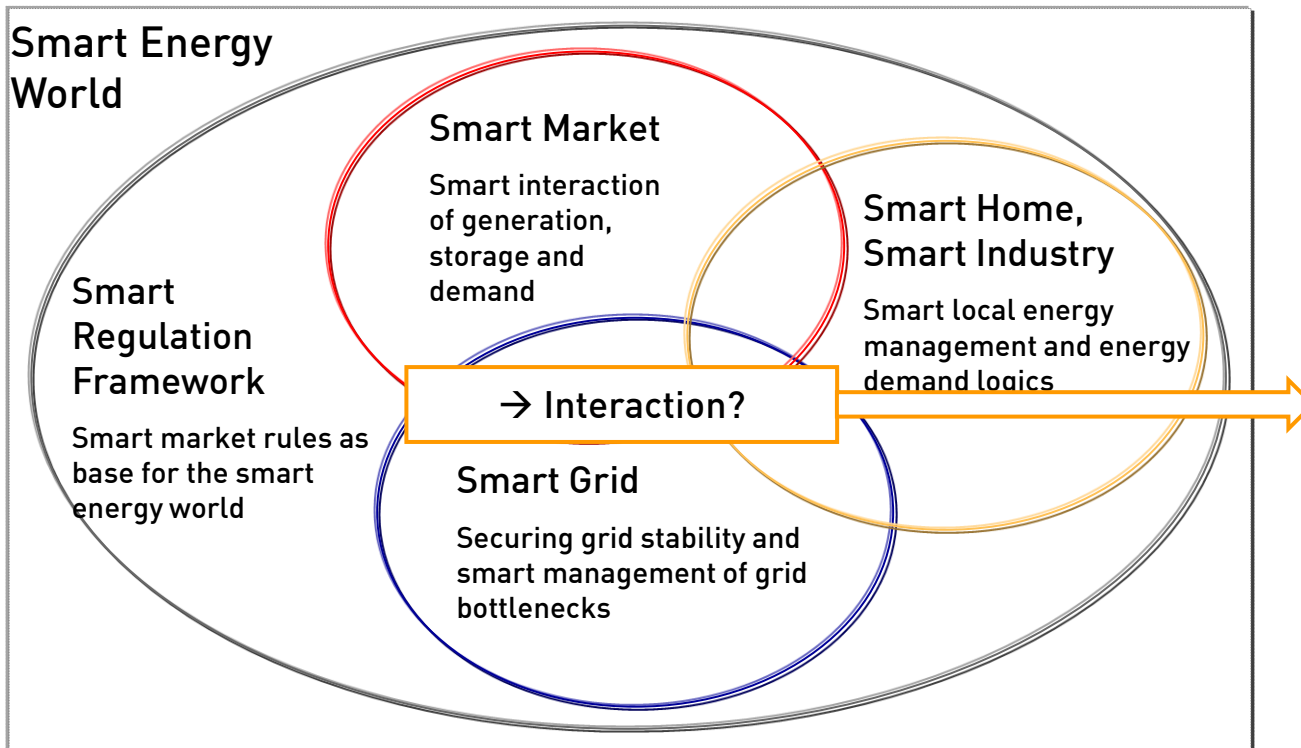
The “Energiewende” requires a modified market design

- High portion of fluctuating renewable generation becomes the dominating factor in the electricity system
- Approach to that problem:
 - Demand response approaches (incl. batteries systems) for physical integration of fluctuating renewables
 - Prevention and management of local grid bottlenecks as well as on low voltage as on medium voltage levels via integration of smart market

Background

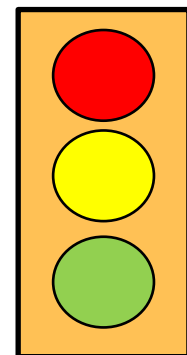
The Players of a Smart Energy World

- Essential: How can the interaction of the players of a smart energy world be organised?
- The concept of “grid signal light” is developed to organise the interaction of smart market and smart grid



„Grid Signal Light“

The grid signal light shows the effective system state at the different grid nodes and controls the interaction of the players

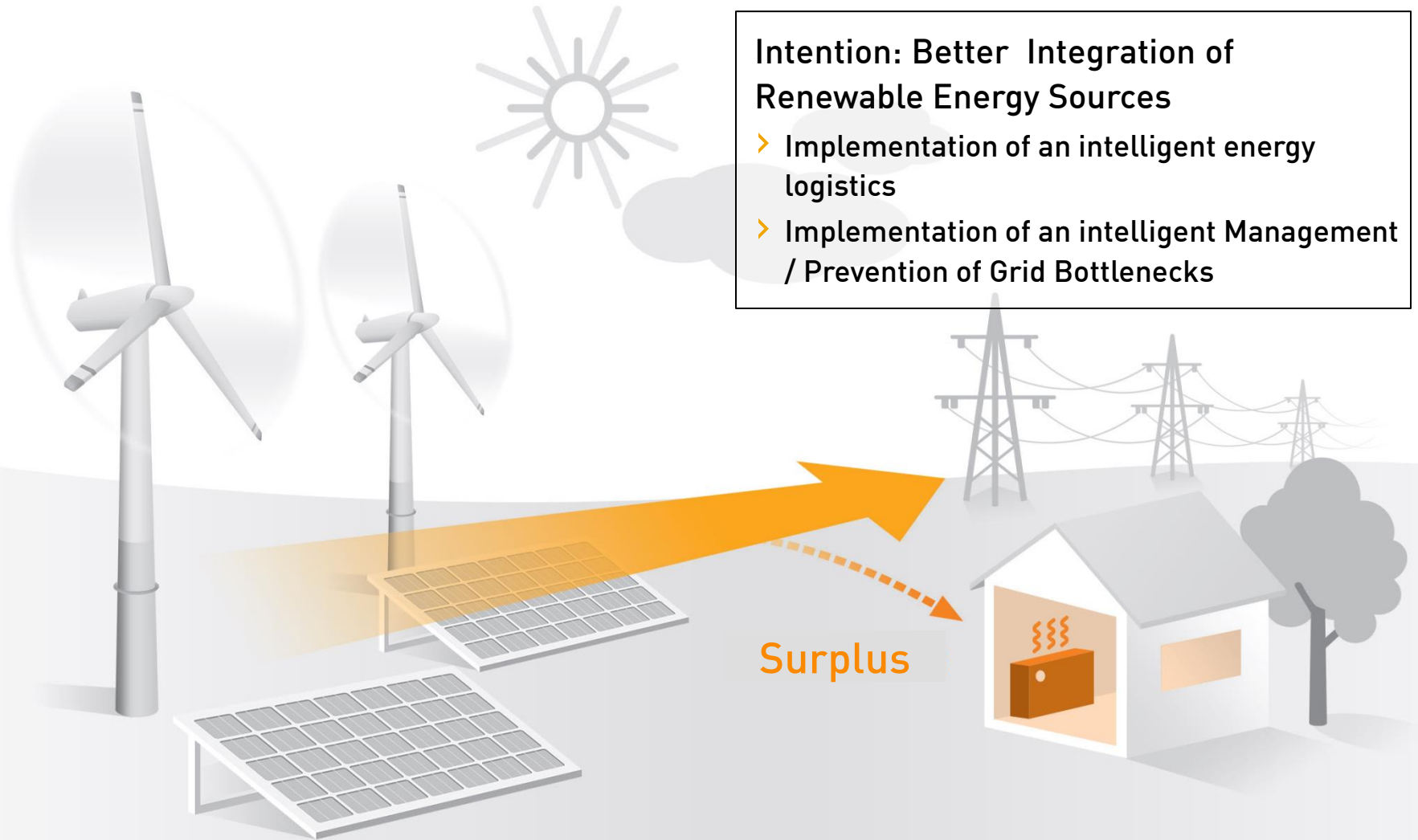


The project “Flexible Electric Heating for Boxberg”



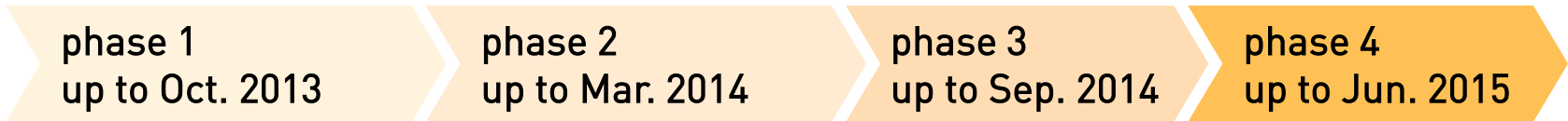
Intention: Better Integration of Renewable Energy Sources

- > Implementation of an intelligent energy logistics
- > Implementation of an intelligent Management / Prevention of Grid Bottlenecks



The project “Flexible Electric Heating for Boxberg”

- Four phases of the pilot project to find out the chances and the constraints of the new control / signal mechanism



Customer resp. Sales & Distribution

Start of the project

- › Installation of 20 customers

Development

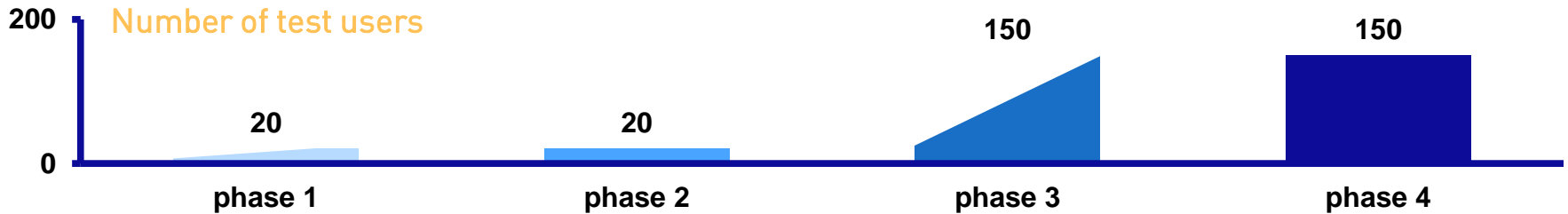
- › Development of the control and signal algorithm

Installation

- › Installation of 150 customers
- › Installation of the complete IT-system

Operation / Analysis

- › Test and operation in the heating period 2014/15



Development of a new control reserve and system services market for regional grid capacity management (Development of a new market design for the “Energiewende”)

Using results for new electric heating products

The project “Flexible Electric Heating for Boxberg”

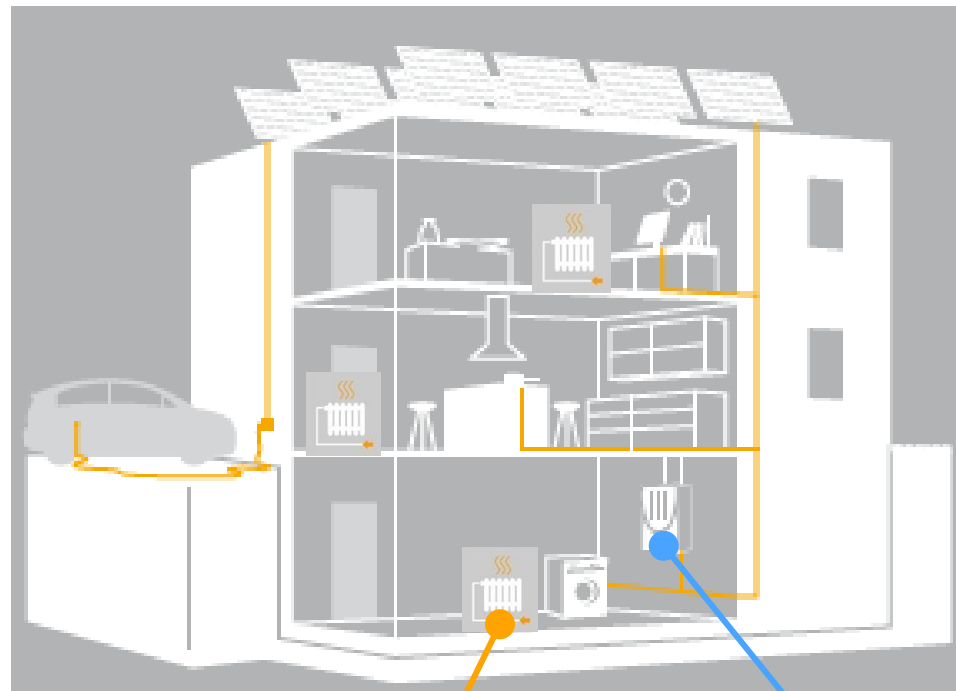
- As test users citizens of Boxberg could bring in their electric heating into the project

> technology

- smart meter
- process measuring and control technology
- triggering of the electric heating

> advantages for the pilot customers

- experience the Energiewende
- benefit

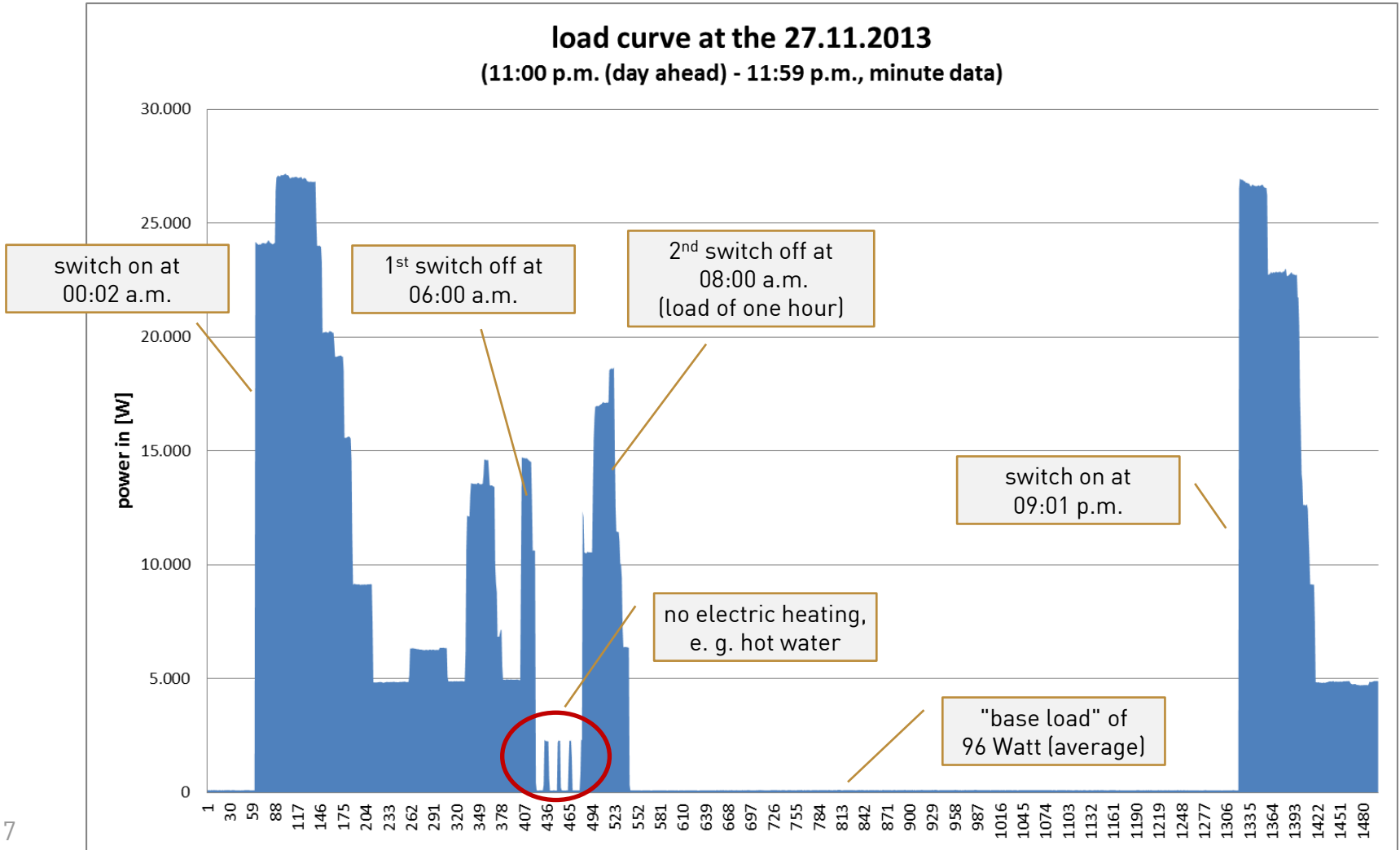


electric heating site

smart meter & local control unit

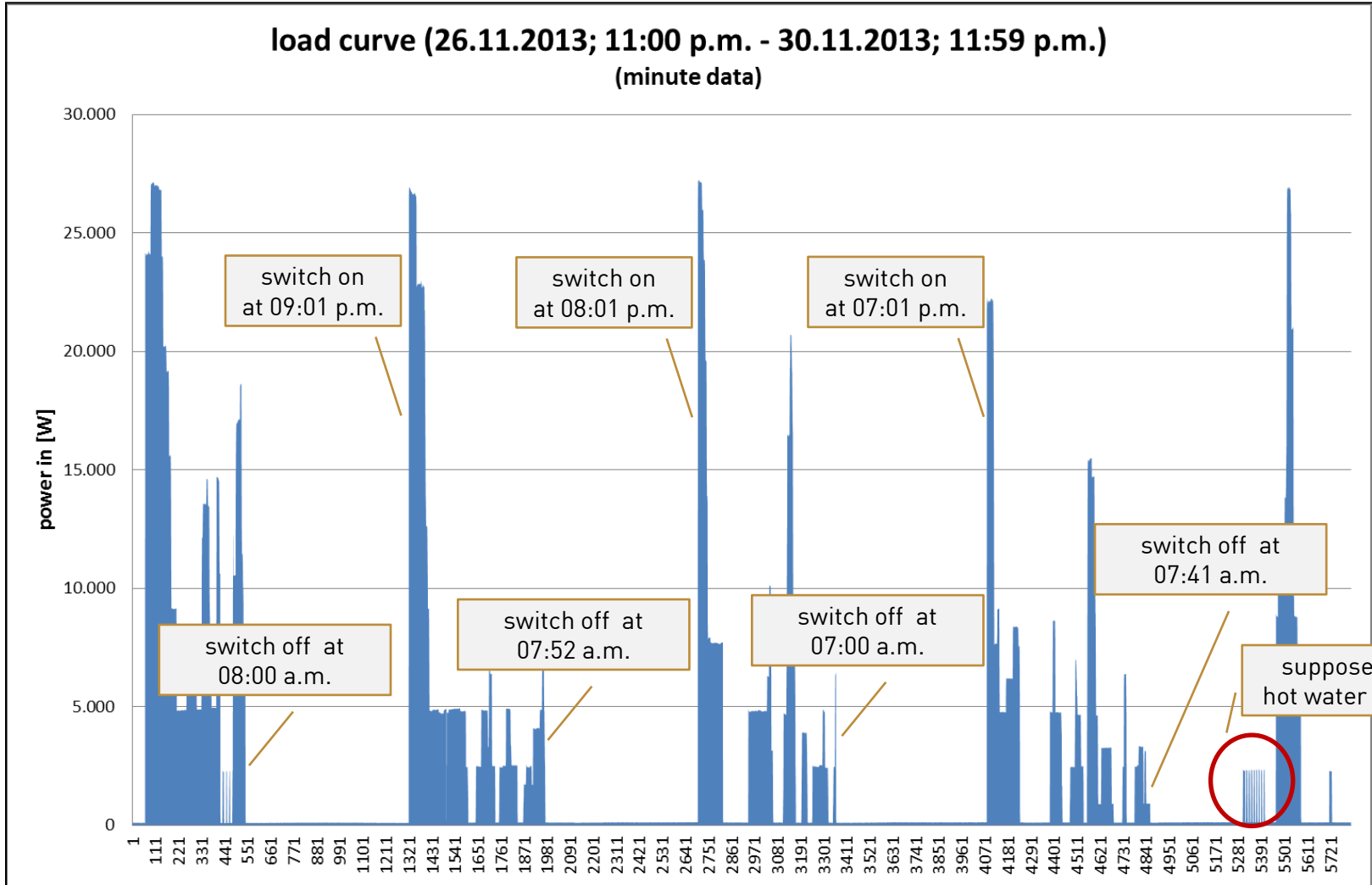
First results

- analysis of load curves



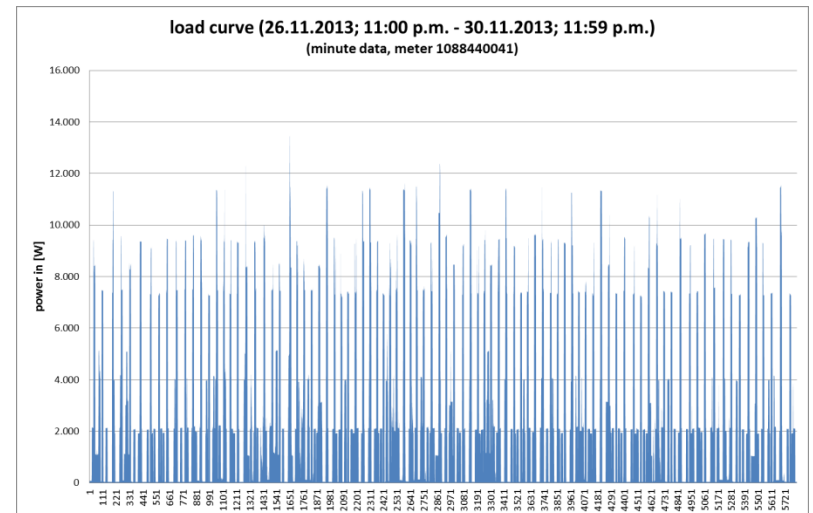
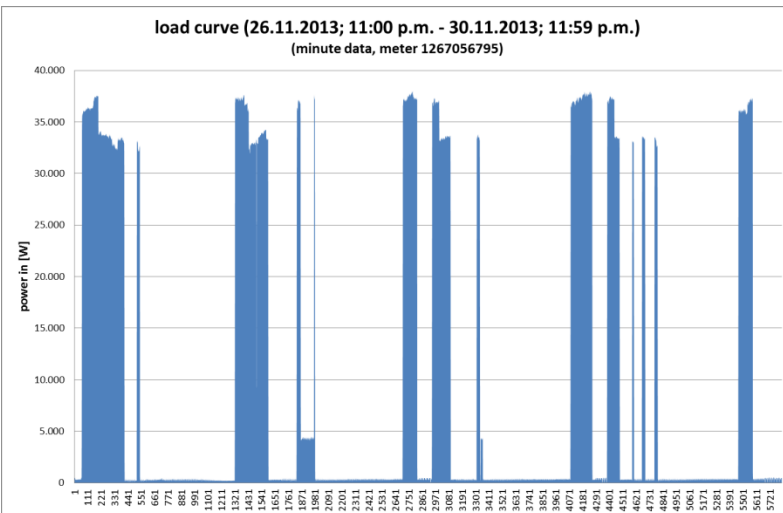
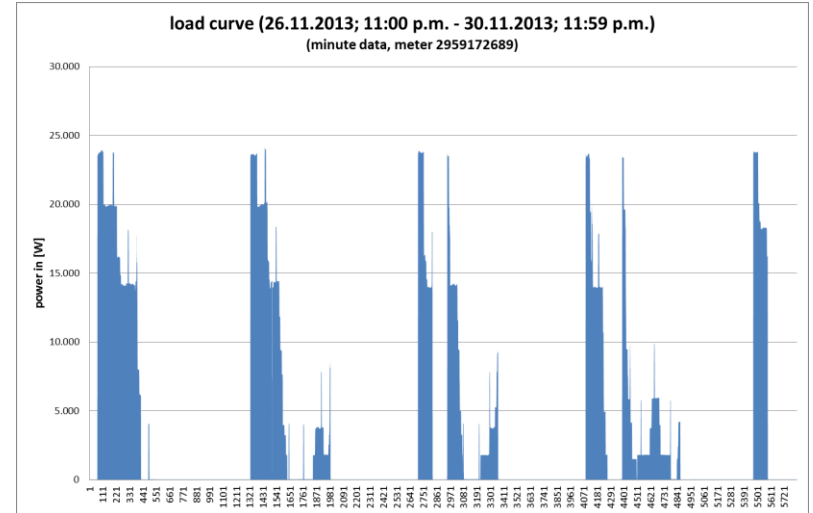
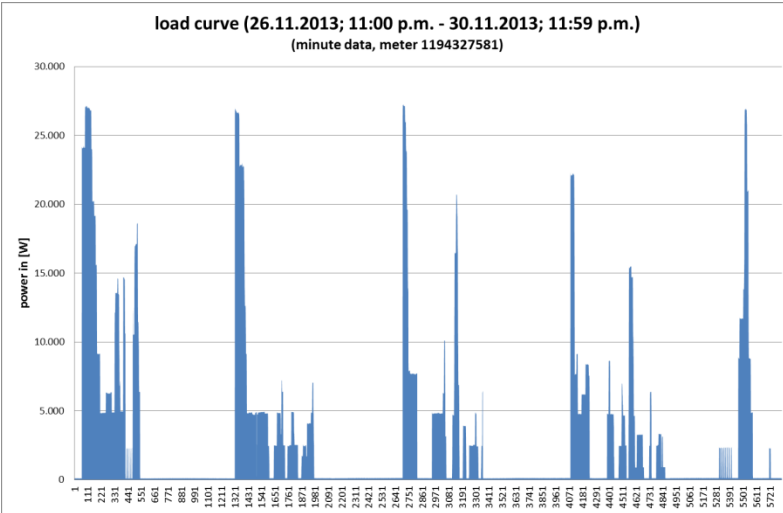
First results

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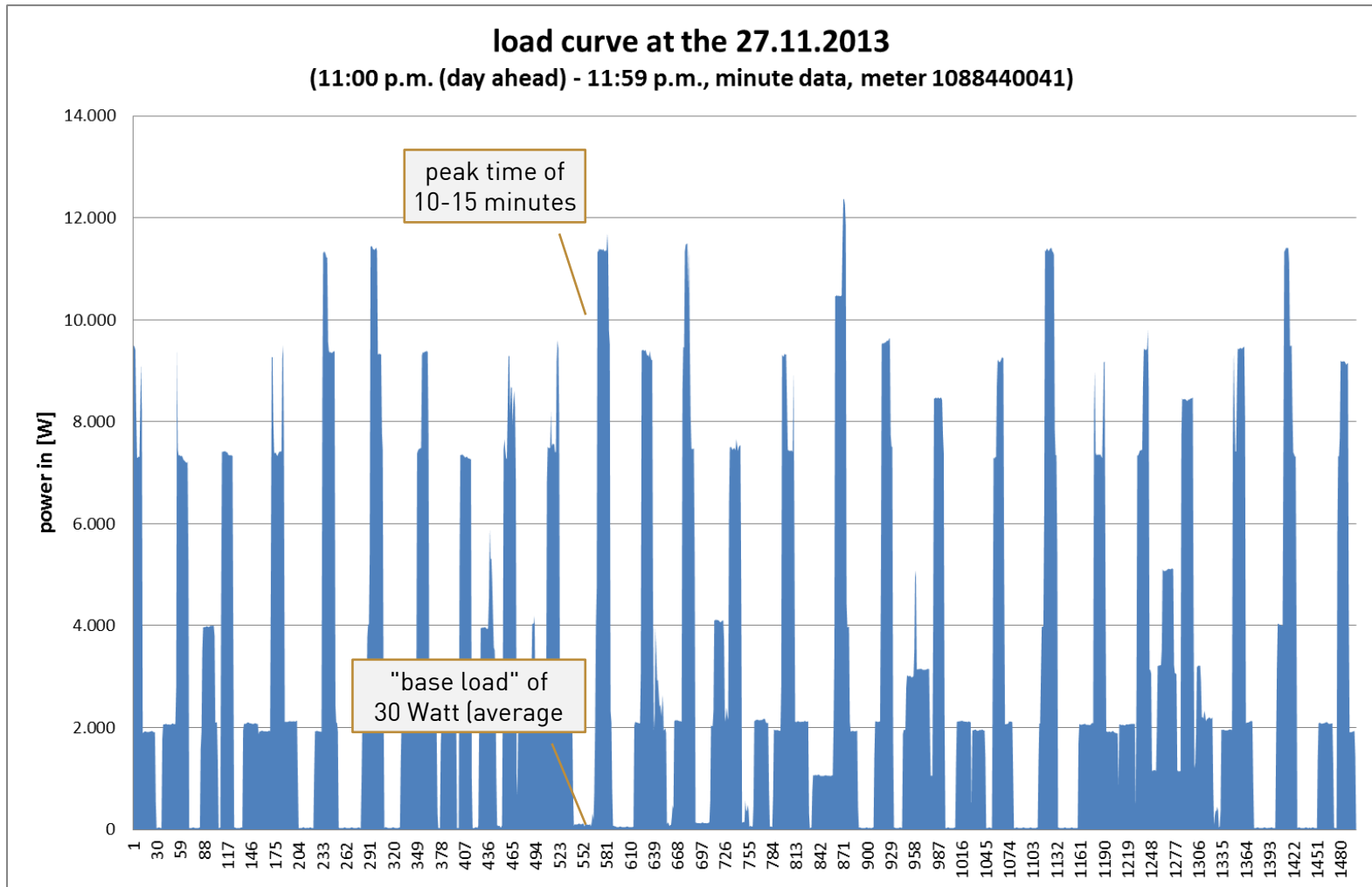
First results

- analysis of load curves



First results

- analysis of load curves



Next steps

Get ready for testing and operation in the heating period 2014/15

- Upgrade the 150 test users
- Complete and implement the IT-system with the signal algorithm
- Finalise the mechanism of the maximum specific utilisation factors to prevent and manage local grid bottlenecks
- Start with the active switching of the heating systems

Thank you for your attention!



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