



Padova, Italy

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EERA JP e3s
conference

Investigation of energy behaviour and behavioural change in the Norwegian energy system based on smart meter data

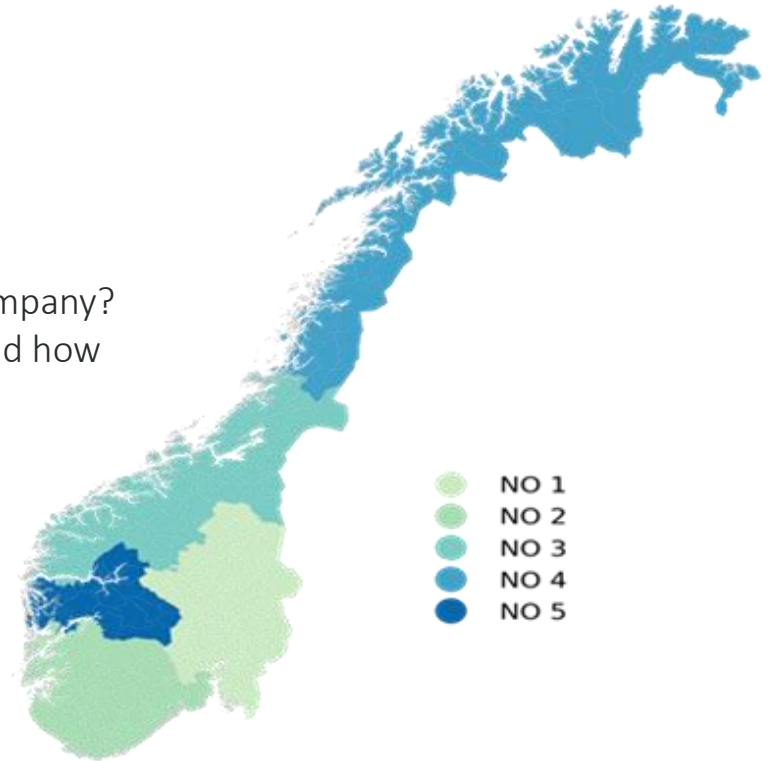
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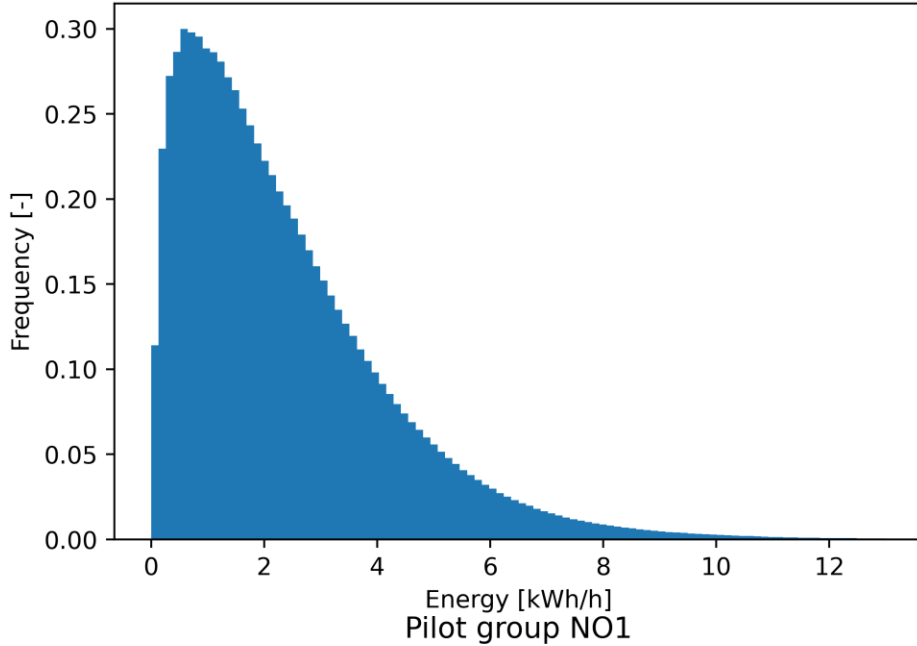
Introduction to the study

- Enova project
 - Solutions for increased awareness
- Research questions:
 1. How does the demand of end-users respond to signals sent from the energy company?
 2. Is there a correlation between change in energy demand and electricity price and how does it differ between different electricity spot regions?
- Dataset:
 - Two electricity spot regions: NO1 and NO3
 - NO1: High price, avg: 83 EUR/MWh
 - NO3: Low price, avg: 35 EUR/MWh
 - Data from two energy companies
 - 4,000 participants
 - Pilot group app
- Dataset weaknesses:
 - Missing data points
 - Missing metadata
 - Fewer participants

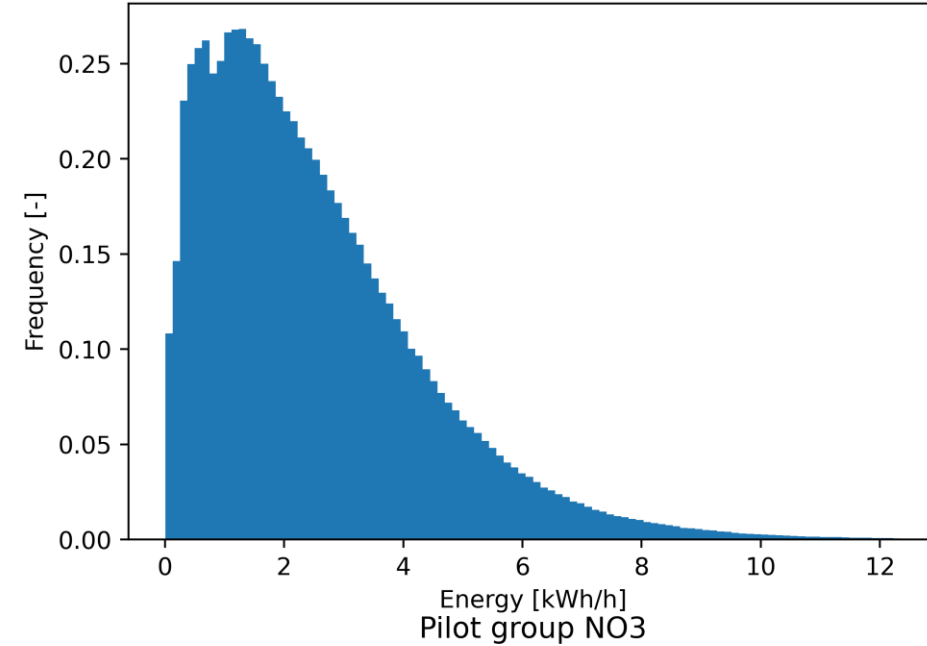


Results: Load demand frequency

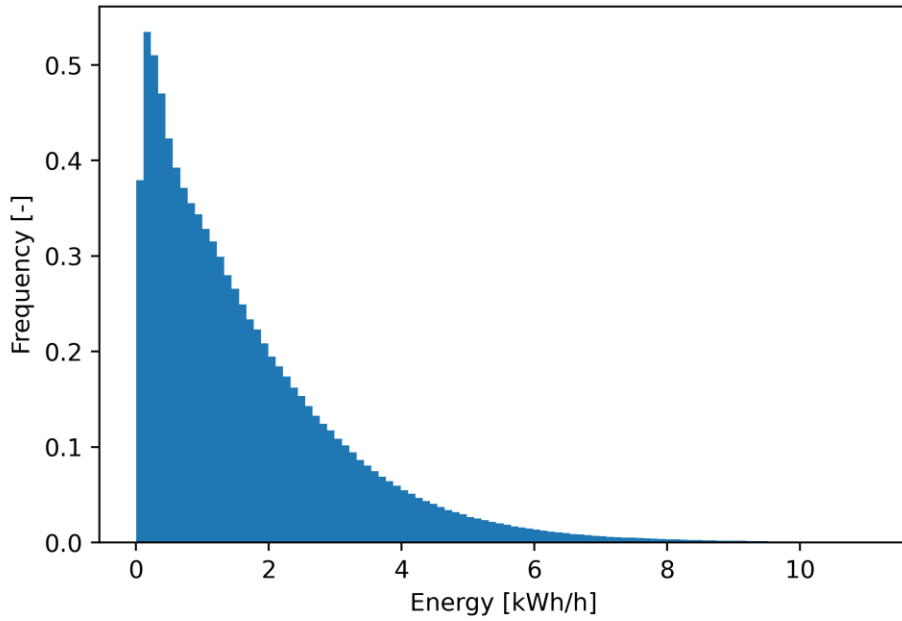
Reference group NO1



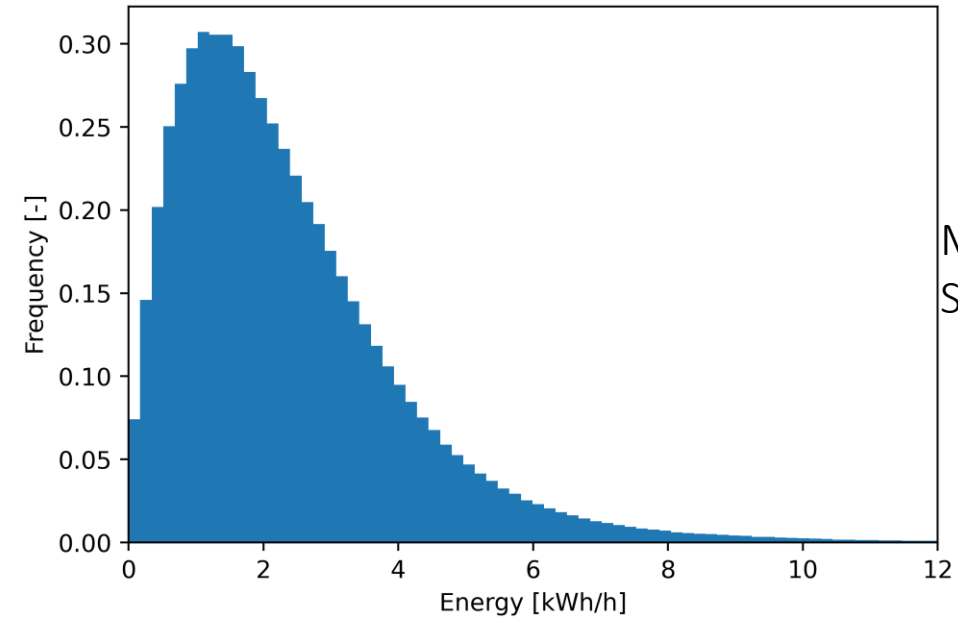
Reference group NO3



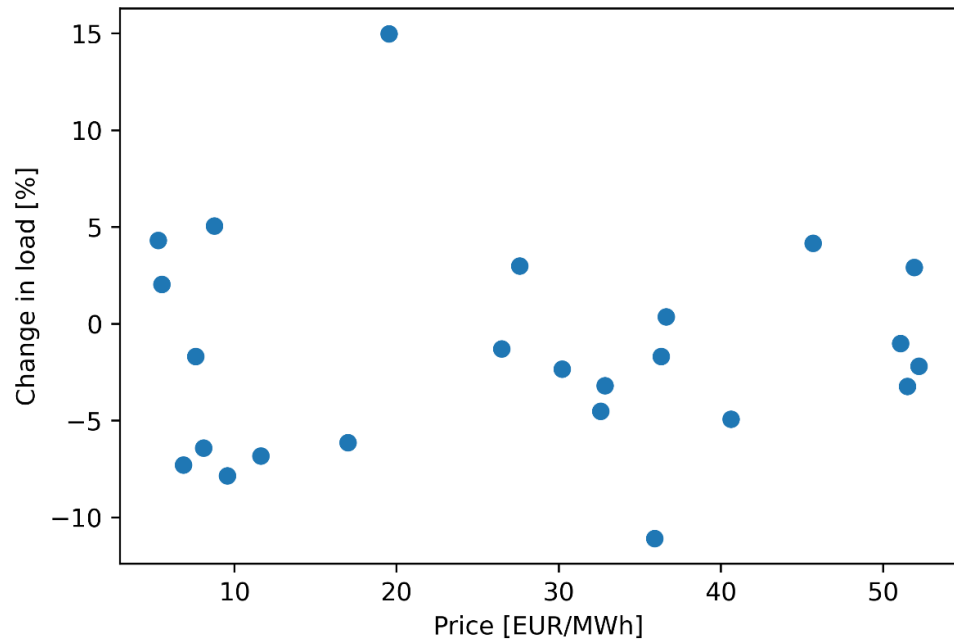
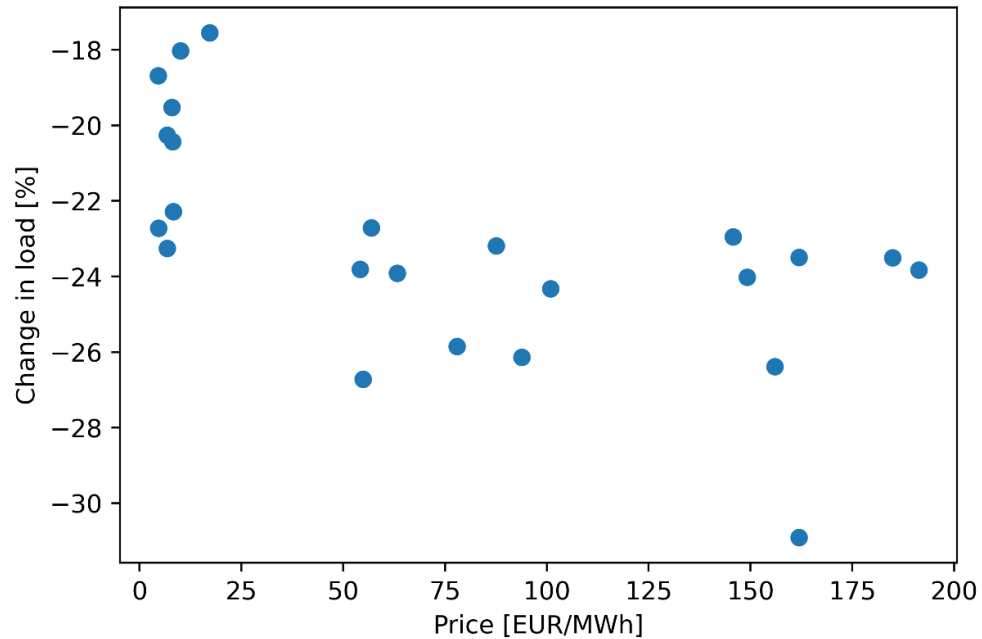
Pilot group NO1



Pilot group NO3



Results: Demand vs spot price



- Change in pilot demand compared to the reference group
- NO1:
 - Weak correlation between change in demand and electricity price
 - Hard to see if the change is saturated or if it will continue for an even higher price
- NO3:
 - No correlation between change in demand and electricity price

Concluding remarks and further work

- Pilot groups reduce their load demand compared to the reference group
- Indicate that the pilot group respond
- Week correlation between change in load demand and electricity price for higher electricity prices
- Result might implicate that there exists some elasticity in the demand for the end-users
 - Need to be researched further
- Metadata analysis:
 - Investigate based on building type
 - Investigate based on customer type
 - Might need clustering
- Investigate the load profile closer to find the reaction pattern



Thank you for your attention!

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