03

Beyond Labels: Uncovering Flexibility Potential in Energy Consumption Data



ENERGY DATA HACKDAYS 2023

03 Beyond Labels (The Results)

Uncovering Flexibility Potential in Energy Consumption Data

Timo Kropp, Andreas Schuth, Emilie Boillat, Lars Kessler, Tobias Graml, Matthias Brandes, Frederic Nachbauer, Simon Neidhart, Robin Bühler, Christoph Denninger, Amandine Lio, Till Richter, Nicko Emmenegger, Orhan Yildirim

TRANSFORM

Primeo Energy · clever, inspiring, future oriented

primeo energie

Recap:

- How do you identify flexibility potential?
- How do you quantify flexiblity potential?
- How do you visualize the potential as a service for customers?

About disaggregation…



How we identified flexibility potential...

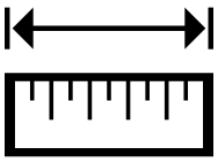


- Disaggregation isn’t a quick thing to hack
- We don’t know the exact devices

However:

- Assumption: Customer is home between 8pm and 0am
- We can use this to identify flexibility potential
- So we can shift the load to use locally produced energy

How we quantified flexibility potential



- We have statistically calculated the upper bound of shifting potential

Upper Bound:

- This means all evening energy is shiftable

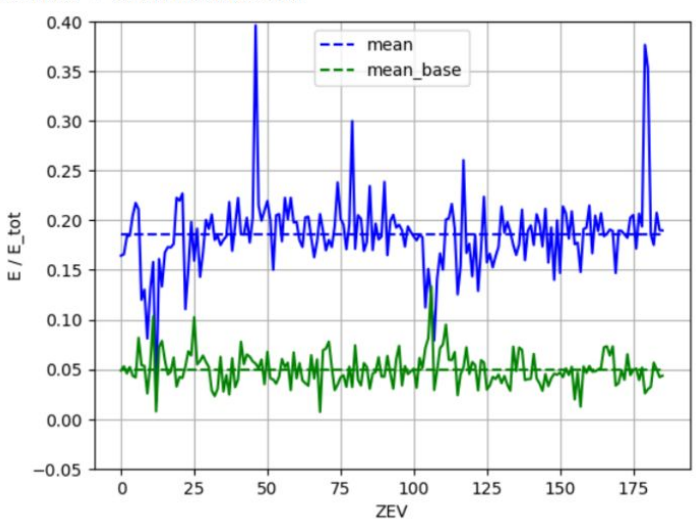
Lower Bound:

- Shifting potential of baseload

True Potential:

- Delta of upper and lower bound

13,2 %



And how we can visualize flexibility potential?



10 ZEV households shifting

13% of their consumption

(aprox. 1kWh per day)

=



1 Storage battery avoided

(à 12 KWh for 1 building)

=

1.5 months CO^2 emissions of a Swiss person

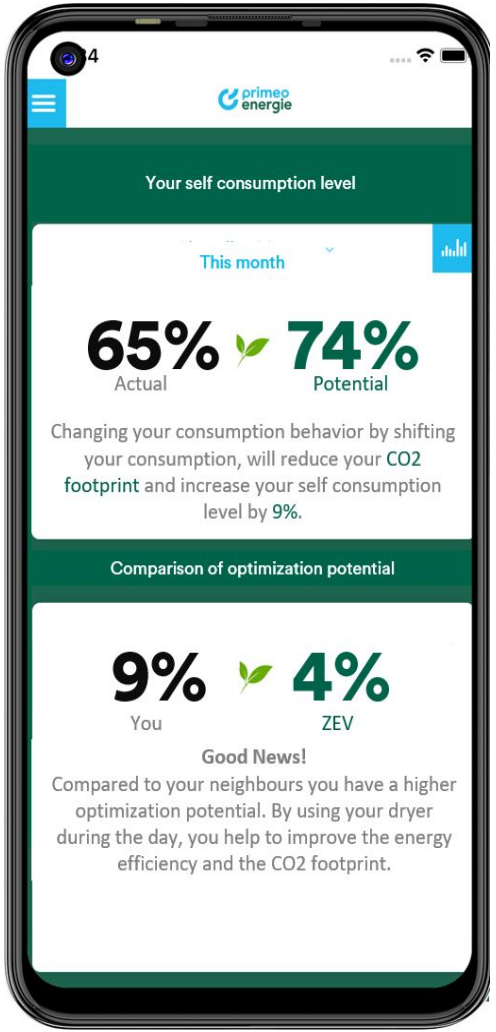


1700 kg CO^2 saved

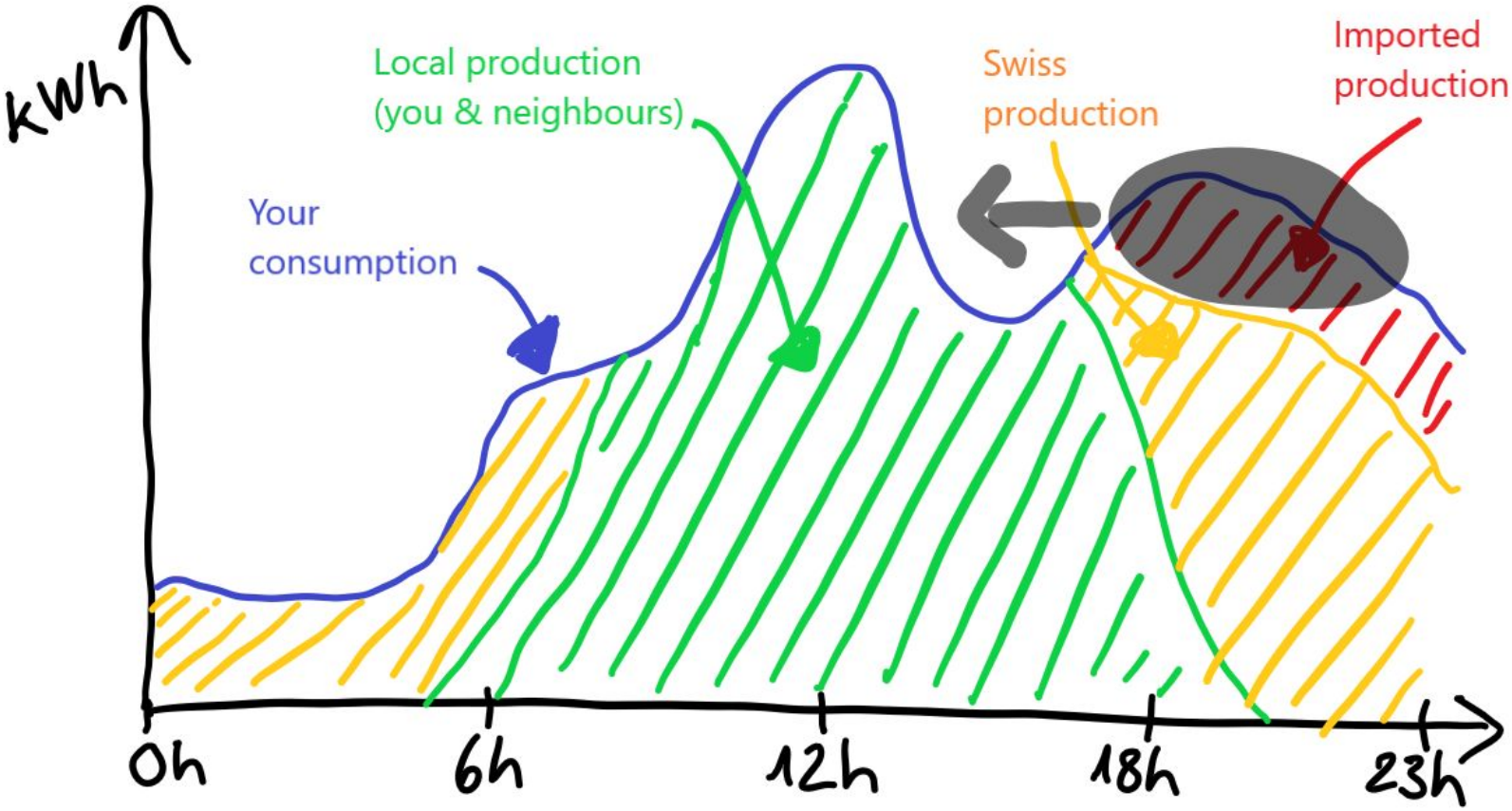
(Battery production = 62-212 kg CO^2 per KWh Battery → on average 140 kg CO^2 * 12 KWh = 1680 Kg

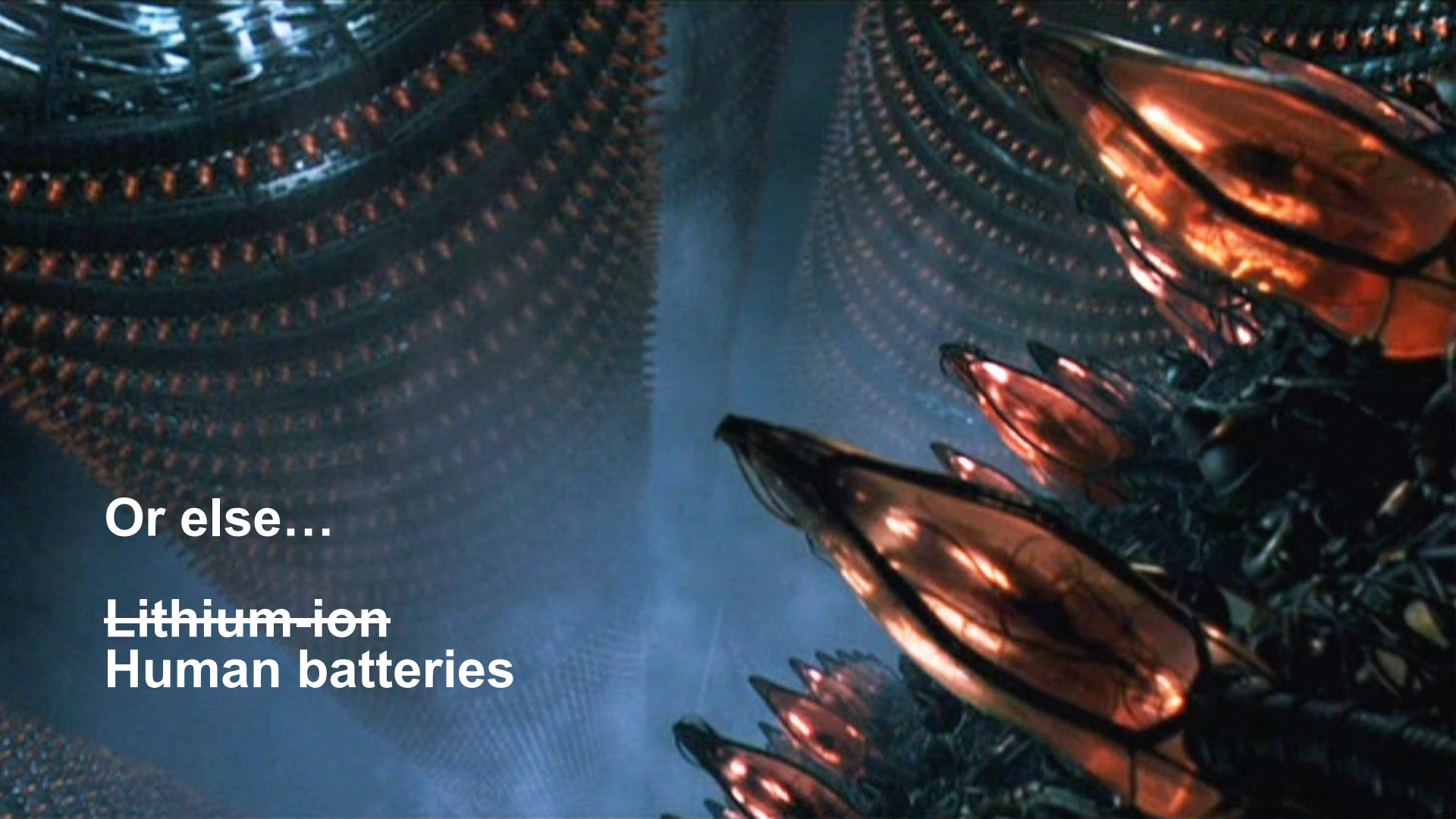
How we can visualize flexibility potential?

- Self-consumption level
- Additionally the potential to shift
- Comparison with ZEV-Neighbours



How we can visualize flexibility potential?




Or else…
~~Lithium-ion~~
Human batteries