



# Sustainable innovation

# Sustainable Innovation

2019-04-24 Effektverkstad uppsala länstyrelse  
@Sustify @joachimlindborg  
#Väx\_EI #Live\_In #smartgrid #energiutblick



# Elektrifiering



161 produkter Sortera Popularitet

**Gardena Gräsklippare Gardena PowerMax 32 E**  
Gräsklippare Gardena PowerMax 32 E är en högpresterande och bekväm elgräsklippare med kraftfull motor som ger perfekt precisionsklippning och optimerad uppsamling. Gräsklipparen gör det enkelt att kl... [mer info](#)

Lägg till i min lista

I lager

Butikens betyg: ★★★★★ 2762 recensioner

VERIFIERADE RECENSIONER

**Flymo Turbo Lite 330**  
Avancerad elektrisk luftkudde-klippare med metallkniv, för snabb och enkel klippning. Gräsklipparen är tyst och smidig och släpper inte ut några avgaser. Denna gräsklippare passar perfekt för snabb kl... [mer info](#)

Lägg till i min lista

I lager

Butikens betyg: ★★★★★ 22289 recensioner

VERIFIERADE RECENSIONER

**Alko AL-KO Batterigräsklippare 38.4 Li Comfort**  
113124 Kraftfull batterigräsklippare med Li-Ion batteriteknik för sladdlös klippning. I minneseffekt - med laddningsstatusindikering. Den har en stor uppsamlare med nivå sam en bekväm, c... [mer info](#)

Lägg till i min lista

I lager  
4 - 6 dagar

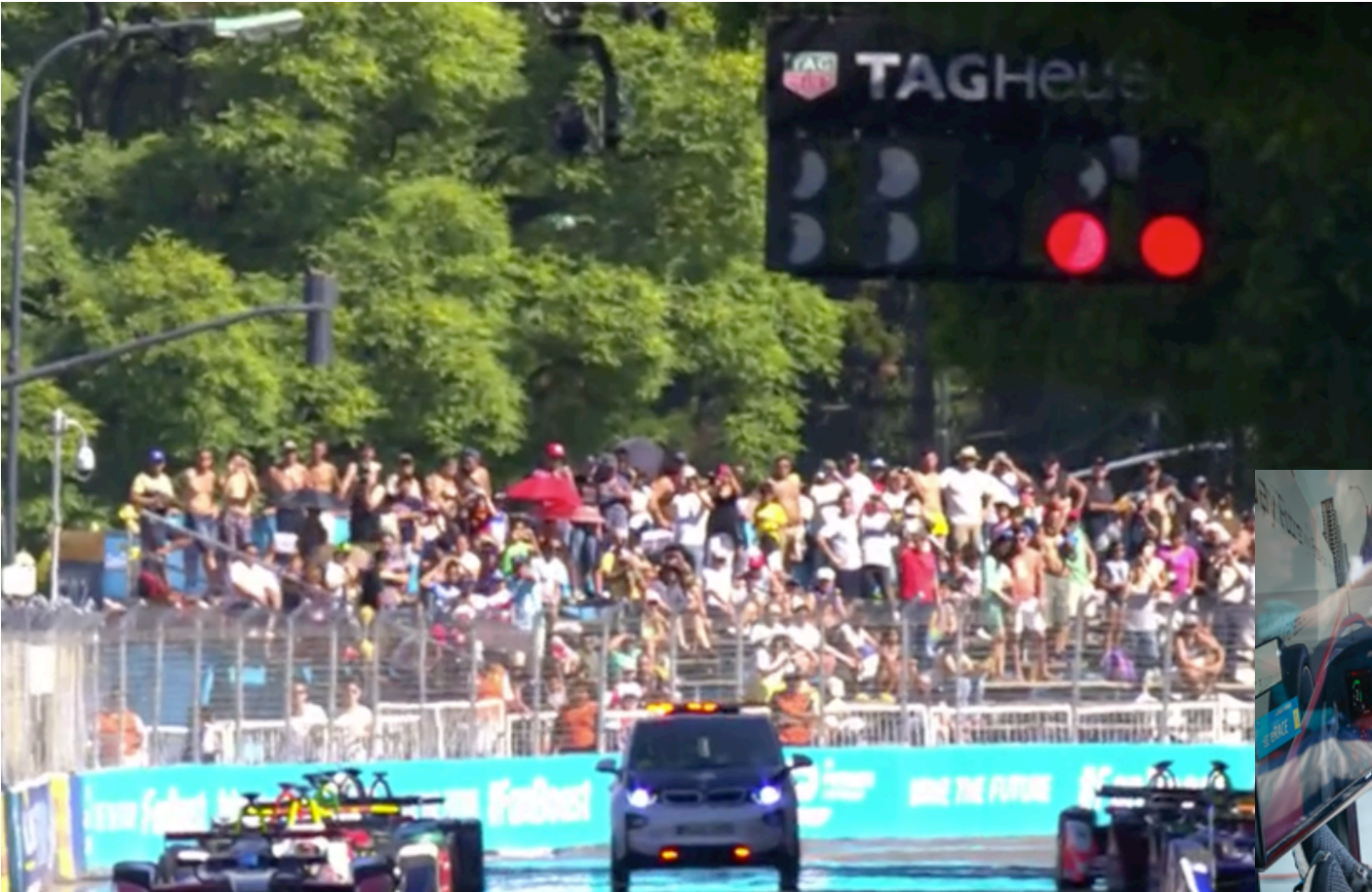
Butikens betyg: ★★★★★ 8 recensioner

VERIFIERADE RECENSIONER





# Digitalisering - deltagande



The fastest fan in attendance on Saturday's race day will go head-to-head with Formula E drivers on simulators running rFactor 2... Can the fan beat the pros?



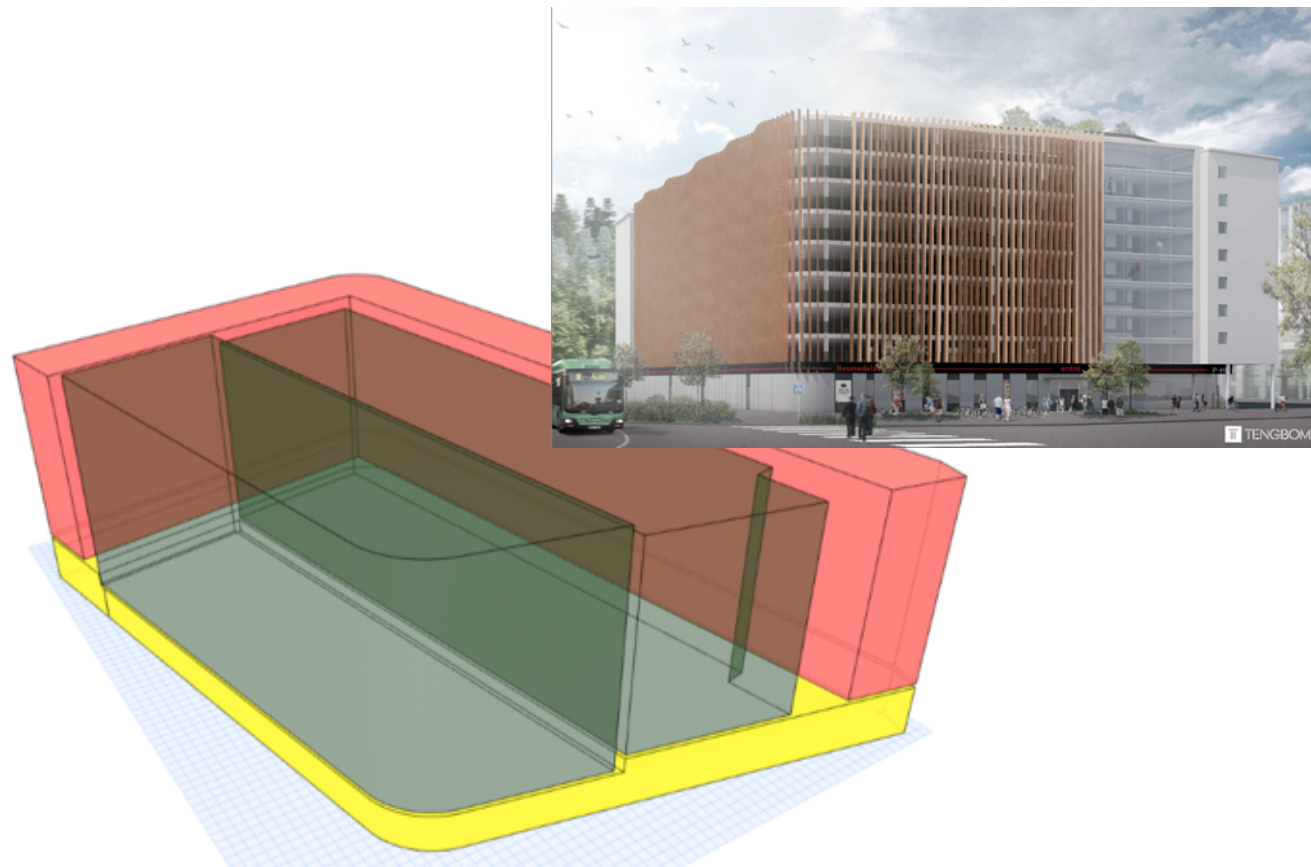
# Smarta elnät?





# Regulatory issues on local energysystems

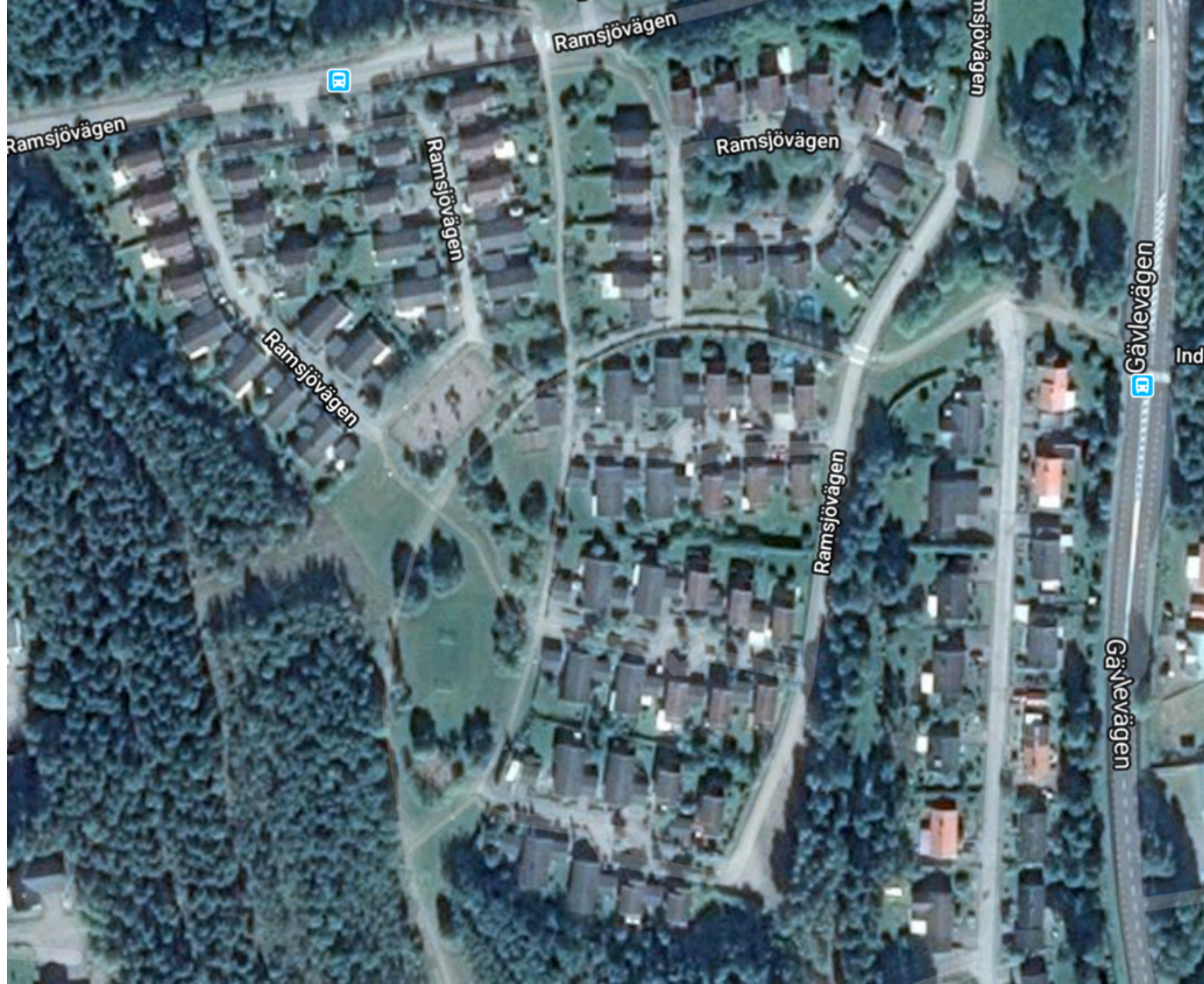
- 3Dimensional ownership of buildings
- Several different usages
- Carpark 100\*3,7kw evcharging
- Rental appartments
- Local store and businesses
- 52kW solcells
- Not allowed to share the production





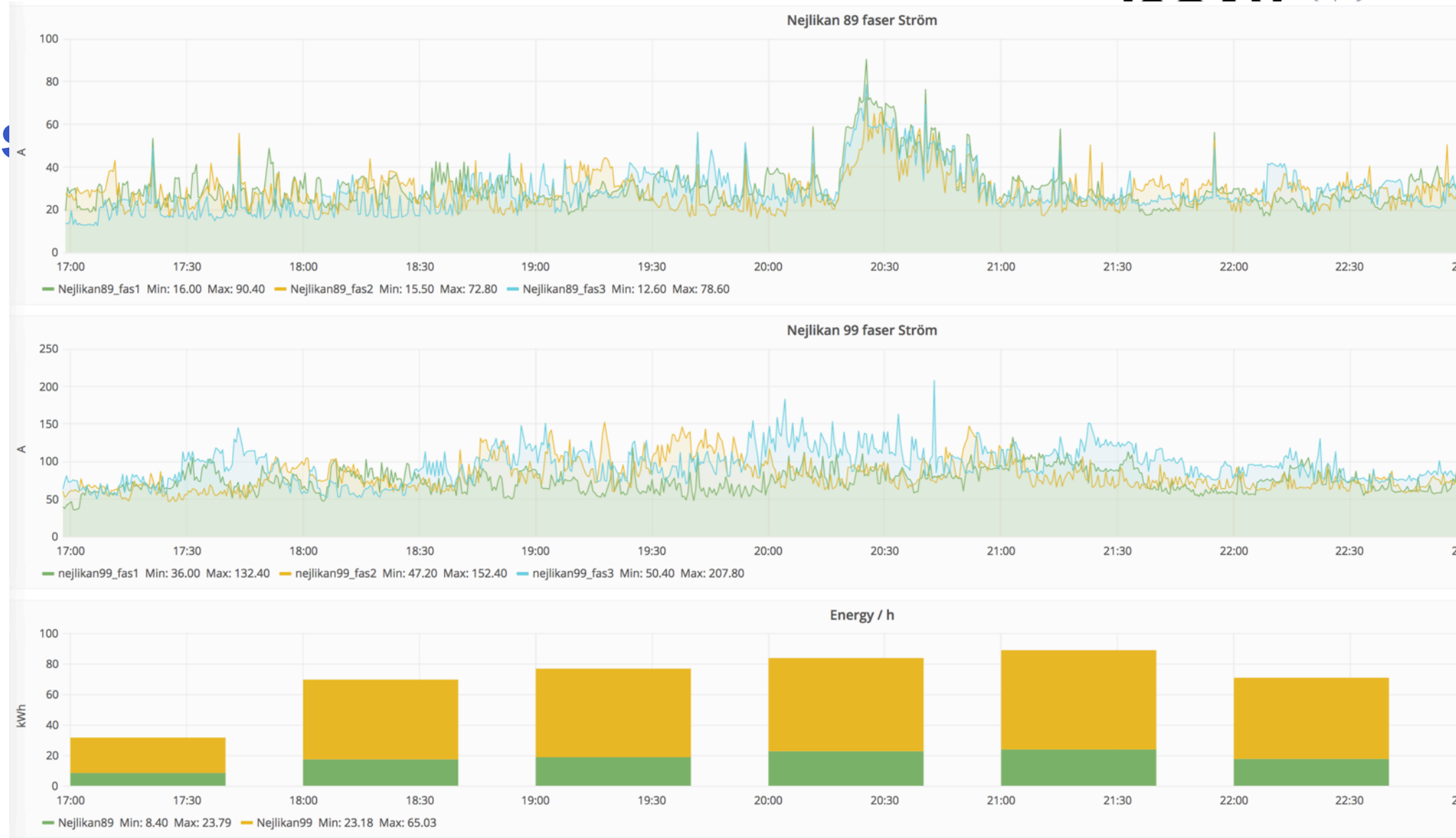
# Regulatory sandbox

- Southbound roofs
- EV's
- Houses with batteries
- Local energy community
- Societal gains





# Fredagsmys





# 5 miljoner elbilar,

<https://www.nyteknik.se/fordon/sa-ska-elnatet-forsorja-fem-miljoner-elbilar-6895429>

**ISGAN**

INTERNATIONAL SMART GRID ACTION NETWORK

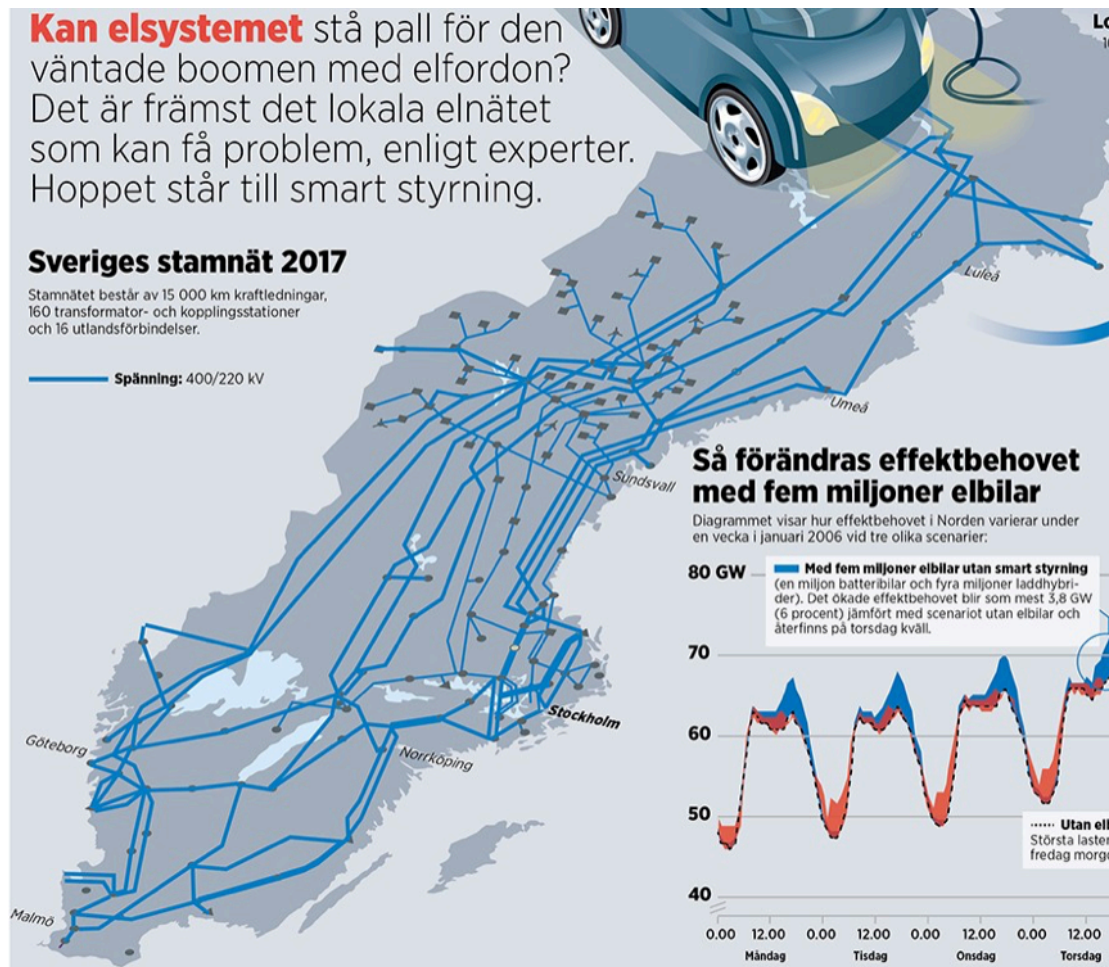


**Kan elsystemet** stå pall för den väntade boomen med elfordon? Det är främst det lokala elnätet som kan få problem, enligt experter. Hoppet står till smart styrning.

## Sveriges stamnät 2017

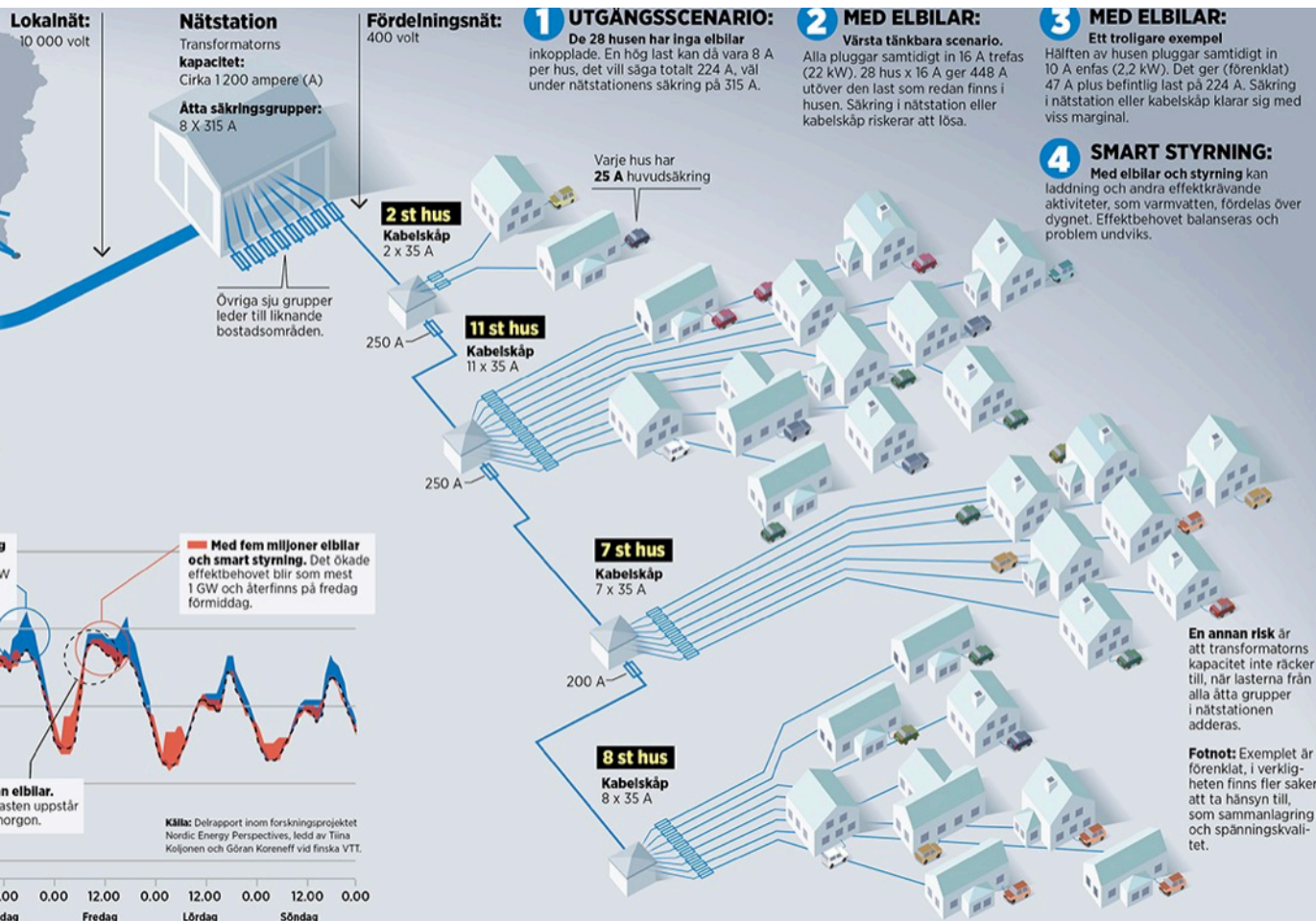
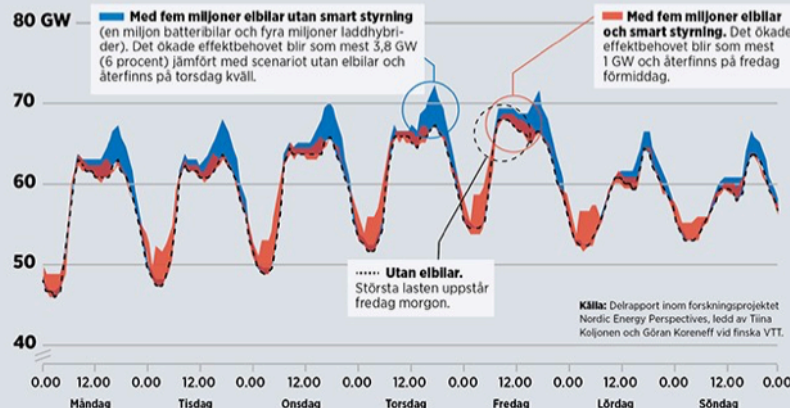
Stamnätet består av 15 000 km kraftledningar, 160 transformator- och kopplingsstationer och 16 utlandsförbindelser.

Spänning: 400/220 kV



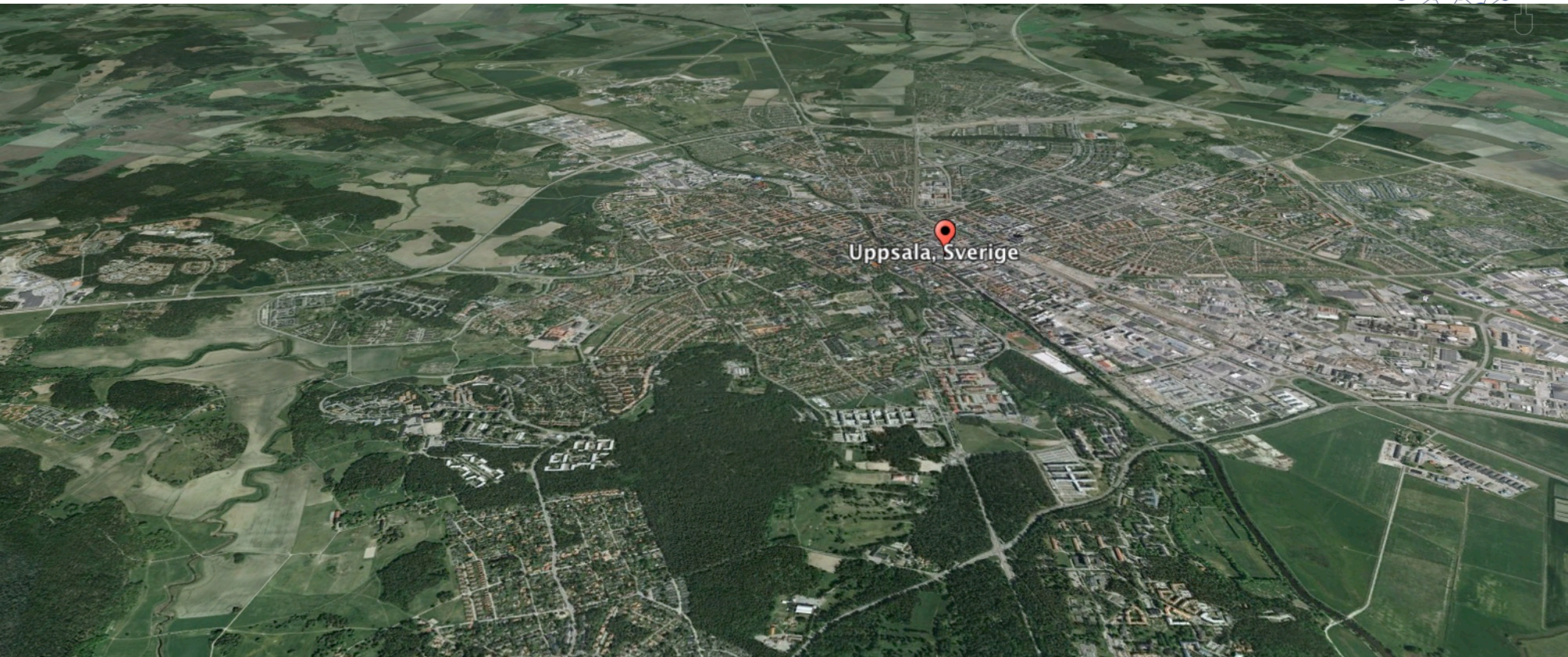
## Så förändras effektbehovet med fem miljoner elbilar

Diagrammet visar hur effektbehovet i Norden varierar under en vecka i januari 2006 vid tre olika scenarier.

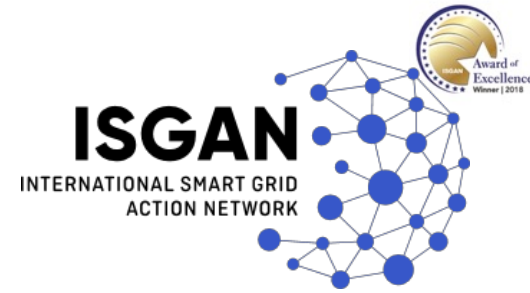
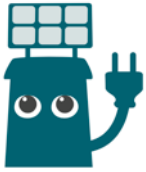




# Lokala energisystemet Uppsala





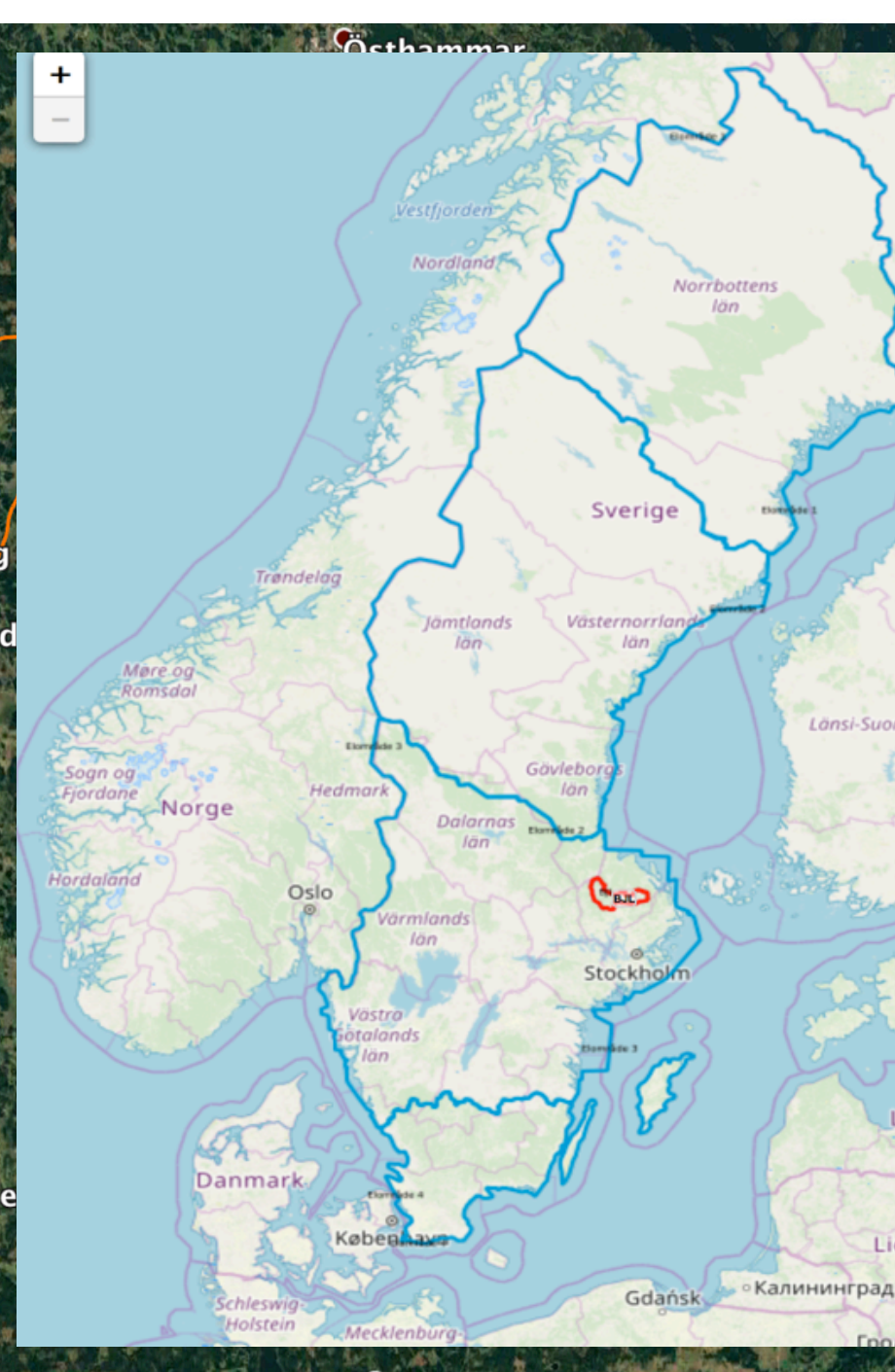
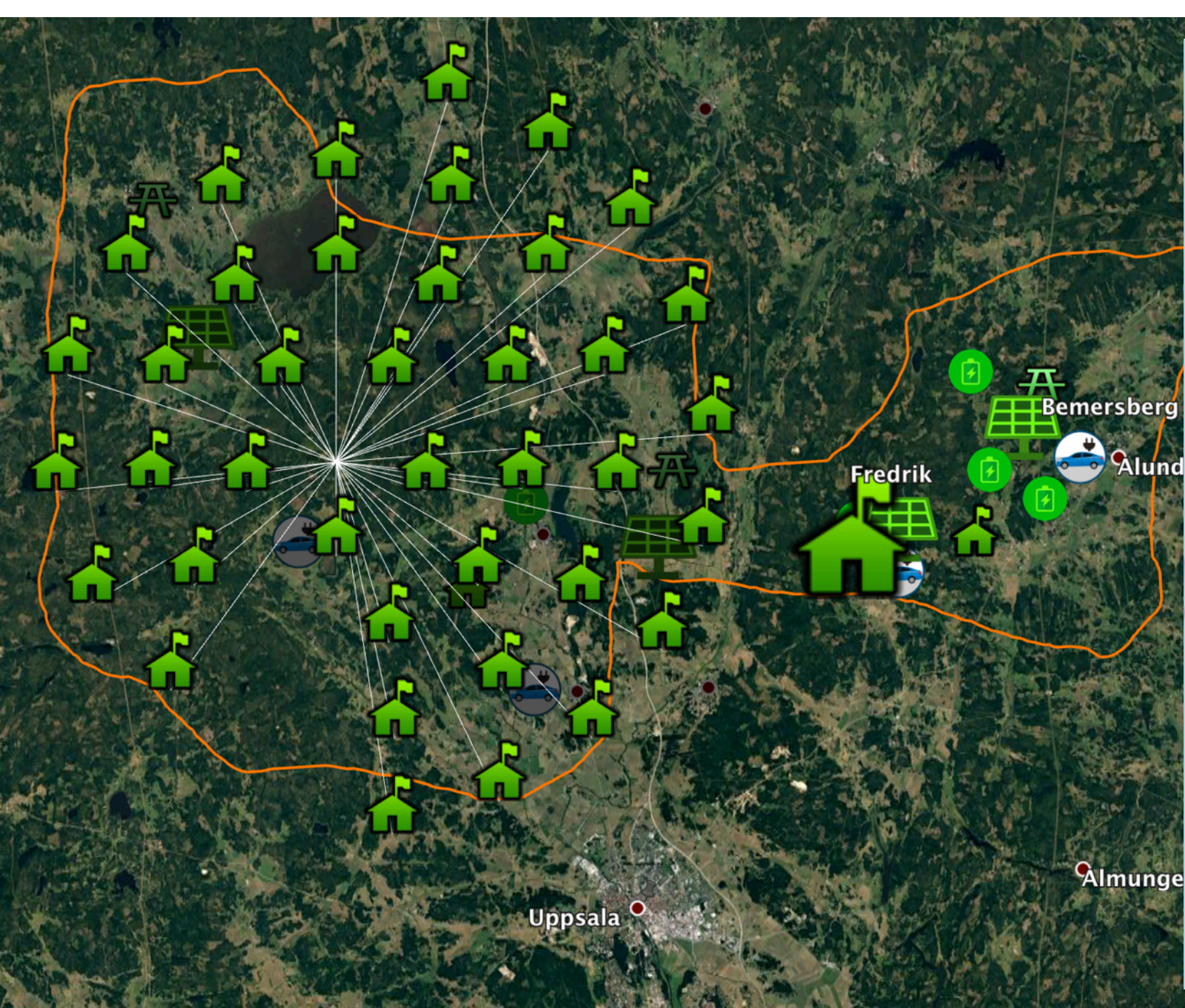


# The Swedish smartgrid testbed

Live-in.se

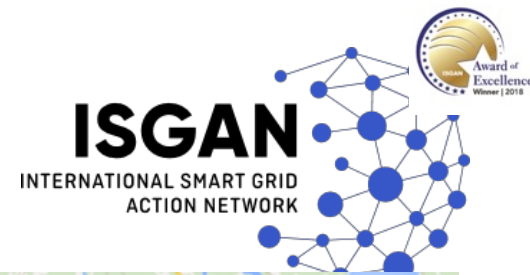








# Goals Coordinating power control #Väx\_EI



- 500 empowered villas in the grid of 14000 customer
- 1MW manageable power, water based inertia in Villas.
- Energyefficiency goal 10%
- 75kWh domestic batteries give 60kW flexibility
- 10x3,7kW connected EV chargers 37kW
- Bussiness models, share the profit
- Customer feedback
- *New dynamic tariff models*





# Vinter tests started 27/11

Domestic Installations

MPC control logic running

Aggregator integration





# Live-In piloter

- Piloter
  - Region Uppsala busstop, fyrislund
  - Vasakronan effekt styrning, realestatecore
  - Warmup värmegolv,



# Uppsala energy stories

- 20talet studentprojekt under våren
- <http://stuns.se/uppsala-energy-stories/>

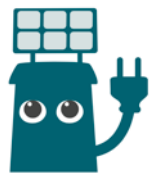


## Uppsala Energy Stories

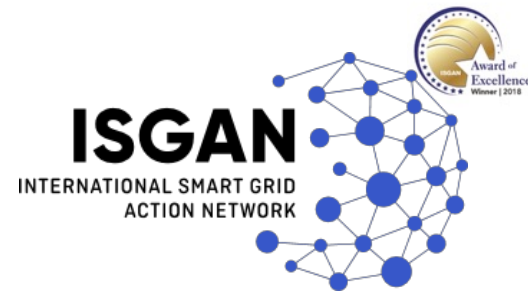
**Studenter antar företagens energiutmaningar**







Effekt, ett av Sveriges just nu viktigaste ämnen  
Vilken kunskap behöver du testa dig fram till?

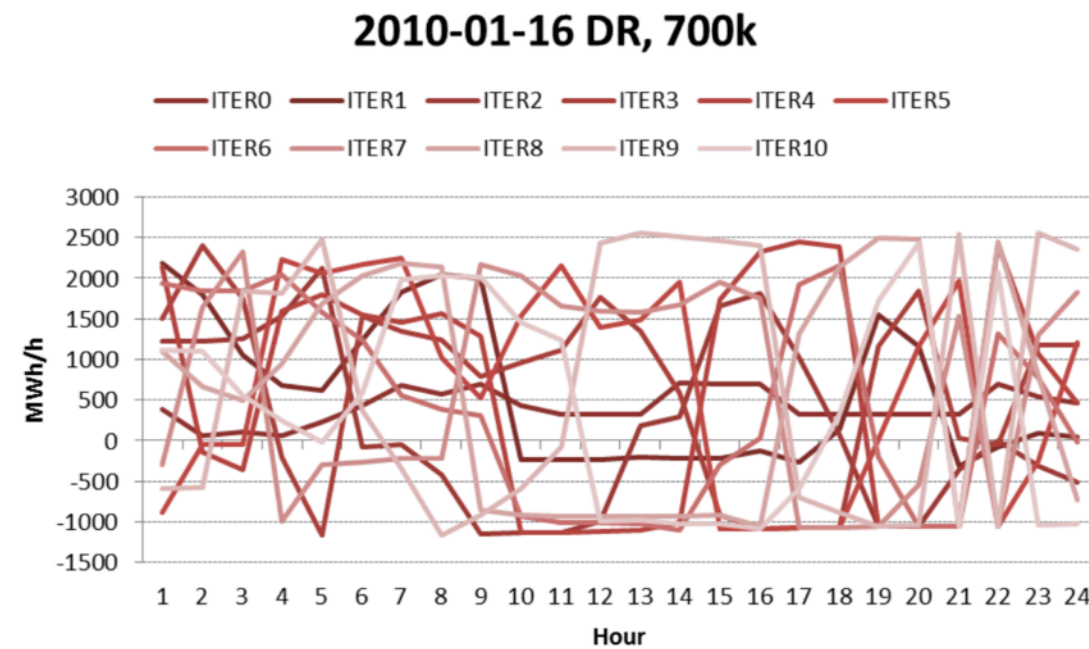
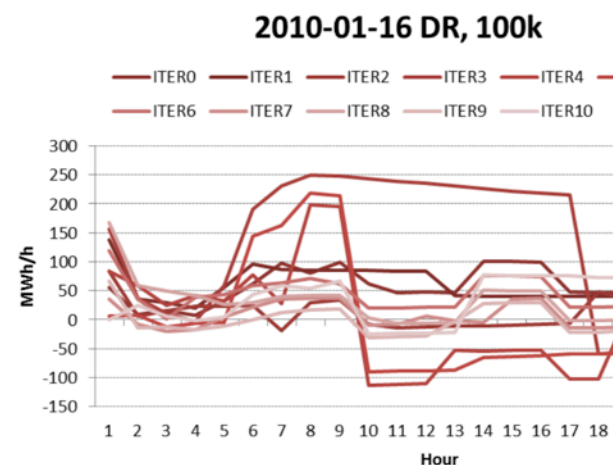
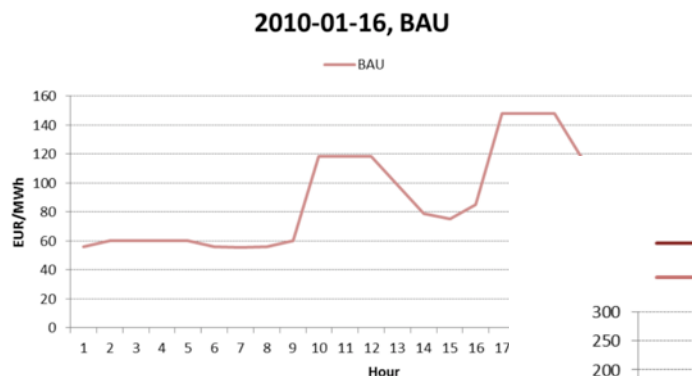


# Framtidens energisystem Välkommen till Live-In smartgrid

Vi är alla del av det nya energisystemet, häng på och var med och förändra

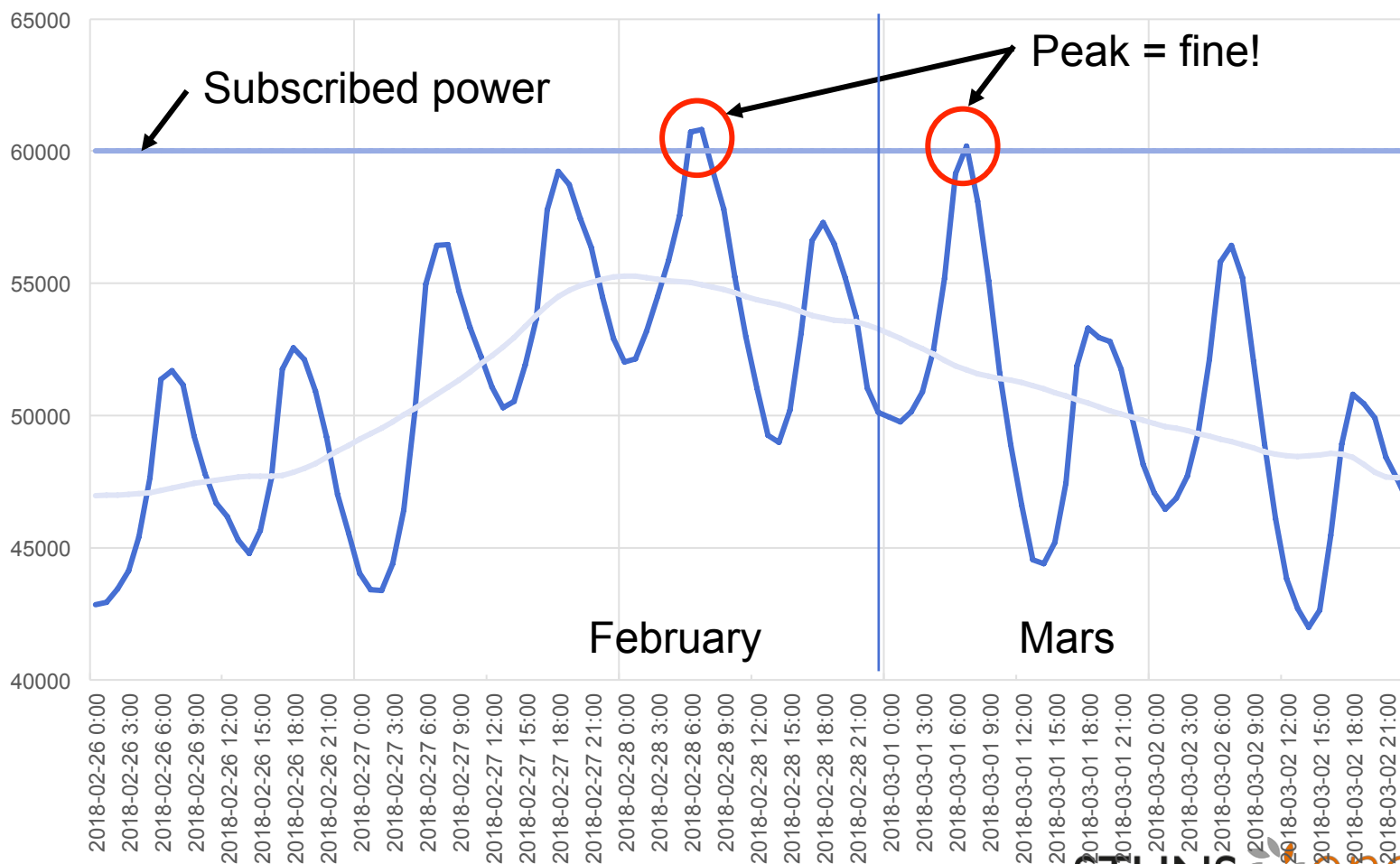


# Active devices on energy only, day ahead market



# The DSO challenge, peaks and fines

Power in Upplands Energi 2018-02-26--2018-03-02





**ISGAN**

INTERNATIONAL SMART GRID  
ACTION NETWORK



# Växel project goals

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STUNS  energy  ferroamp

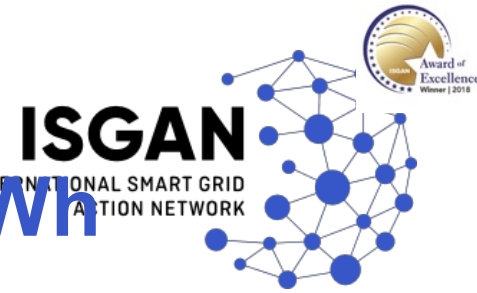
  
UPPLANDS ENERGI  
LOKAL ENERGI SEDAN 1918

 NGENIC

 Sustainable  
innovation  
Nationellt centrum  
för energieffektivisering

STUNS  energy  Sustainable  
innovation

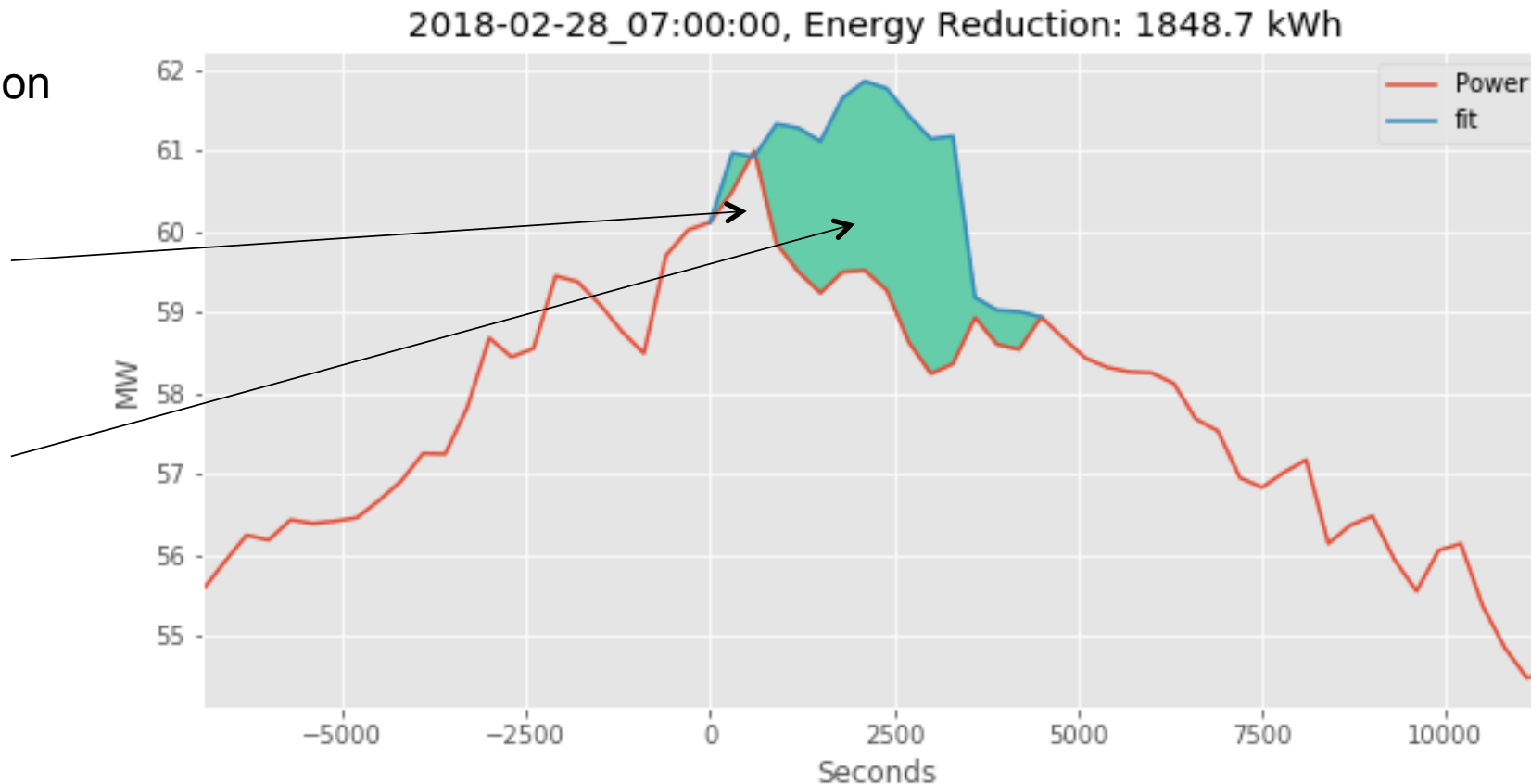
# Potential: 250 Villas unleash > 1MW power flexibility ≈1,8MWh storage



Power subscription  
is 60MW

Overshute 1h  
60,503 MW  
Fine 13 279€

Saved 48 500€



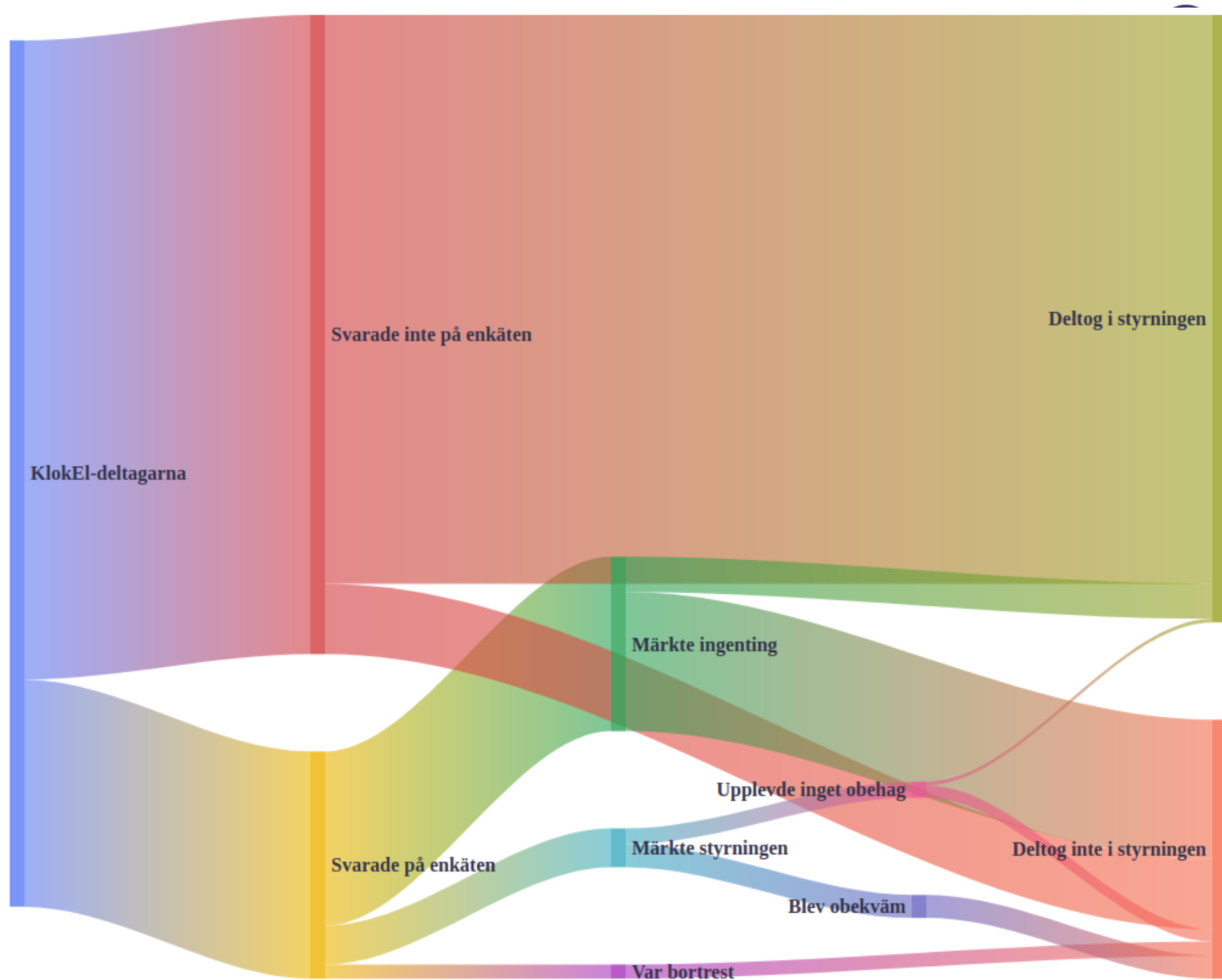
1 500 000  
waterbased  
heating villas  
in sweden can  
provide.

## 6GW



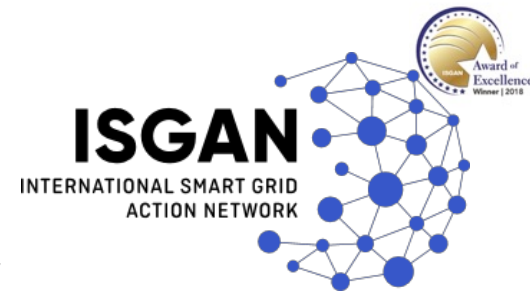


# Don't disturb the users



# ISGAN award of Excellence winner

Price goes to project that in the best way exemplify excellence in smart grids for flexibility



24

Maj

Sustainable Innovation tilldelas  
världspriset ISGAN Award of Excellence  
för projekt VäxEI

Categories: **Aktuellt**



Sustainable Innovation tilldelas ISGAN Award  
of Excellence för arbetet med smarta elnät

[← Tillbaka till projektöversikten](#)



Sveriges smartaste elnät 3:02 min



Artiklar och publikationer

Ny Teknik [De bygger det smartaste elnätet där  
elbilar ska hindra effektbristen](#)

PM [Sveriges smartaste elnät utökas med solen](#)

In order to increase the share of renewable energy and reach a more flexible energy system, the development of new technical solutions is important. It is therefore very pleasing to see the progress made by Swedish companies internationally and I congratulate Sustainable Innovation on the award, confirming that they are world leaders in their field, says Ibrahim Baylan, Swedish Minister of Energy



# About Joachim Lindborg

- Currently CTO of sust.se, I'm a technology enthusiast that believe that IoT is really about human interaction with systems adding value to life and that closed systems will die in favor for open ones.
- For the past 20 years I have been working with system integration, especially at the intersection of energy and IT. I was one of the founders of homesolutions.se a start-up company integrating systems for supervision and maintenance of buildings.
- In the IT boom during the late 1990s I was employed by the swedish Utility Vattenfall to develop solutions for the smart home. It was an exciting time but it ended in disappointment. Now we are back again and with Internet of Things and a more stable technology I do believe that this time we will succeed. Right now I am working with companies in home security, heating and air conditioning, with energy companies and service developers in a project integrating all these technologies with sound business models for smart home services for energy control and efficiency.



Email: [joachim.lindborg@sust.se](mailto:joachim.lindborg@sust.se)

Linkedin: [se.linkedin.com/in/joachimlindborg/](https://se.linkedin.com/in/joachimlindborg/)