

PILOT PROJECTS ON FLEXIBILITY

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NORDENERGI

- ⌚ **Collaboration between the Nordic electricity industry associations.**

- ⌚ **Members:**
 - ⌚ Norwegian Electricity Industry Association
 - ⌚ Finnish Energy Industries
 - ⌚ Danish Energy Association
 - ⌚ Swedenergy
 - ⌚ Federation of Icelandic Energy and Waterworks

- ⌚ **Rotating presidency**



Nordic map of flexibility projects



NORFLEX

- ⌚ Incentivation and use of consumer flexibility
- ⌚ 8 large scale pilots
- ⌚ Reduce grid investments and cost of operation using market mechanisms



Finnish projects

Fortum's DSO – battery

- ⦿ A resource- and cost-efficient way for preparing for and managing grid failures
- ⦿ Service provider performs requested services for the DSO

Flexens -Åland

- ⦿ Aggregate flexibility resources for local and global needs
- ⦿ Cost-efficient grid operation with a large share of VRES connected into the grid
- ⦿ Island conditions



TSO-DSO Local Flexibility Market in Denmark

⌚ **Challenge**

- ⌚ Large growth of RE leading to local bottlenecks
- ⌚ Currently most evident on the island of Lolland

⌚ **Proposed Solution**

- ⌚ Activation of local flexibility from generation and large consumption units
- ⌚ Use of existing IT and market setup
- ⌚ Local flexibility providers submit bids in the existing regulating power market with an addition of a local geotag

⌚ **Timeline**

- ⌚ 6 month pilot, start in January 2020.



Conclusions:

- Flexibility in the power system a key enabler in the energy transition
- Guaranteeing network stability requires a more distributed approach; more investments in DSO grids and flexibility services.
- The creation of efficient energy service markets is key
- Optimized local peer-to-peer interactions needed, while at the same time provide access to regional, national and cross-border trade.
- A learning process, both technically and in relation to market activities. Pilots play a crucial role!
- Investigate and implement stronger role for the DSO, new forms of DSO-TSO cooperation, and reformed incentive structures

Local Markets and Flexibility

CoordiNET & SWITCH

Charlotta Klintberg

e-on

today

Stable base load
connected on the TSO-grid



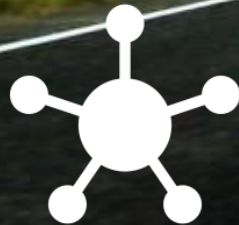
Cost based regulation

Connected on the Regional Grid (DSO-grid) Dispatched based upon price



Central grid structure

A few large generation assets feed many small customers. A grid structure that follows.



tomorrow

Intermittent generation

Both baseload and regulating power is based on availability of wind/solar
- requires a lot more installed capacity
- Localized in new places



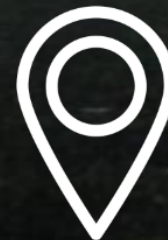
New Consumption

Power is used in new ways, at new times. Can be both an increase in the challenge, or part of the solution

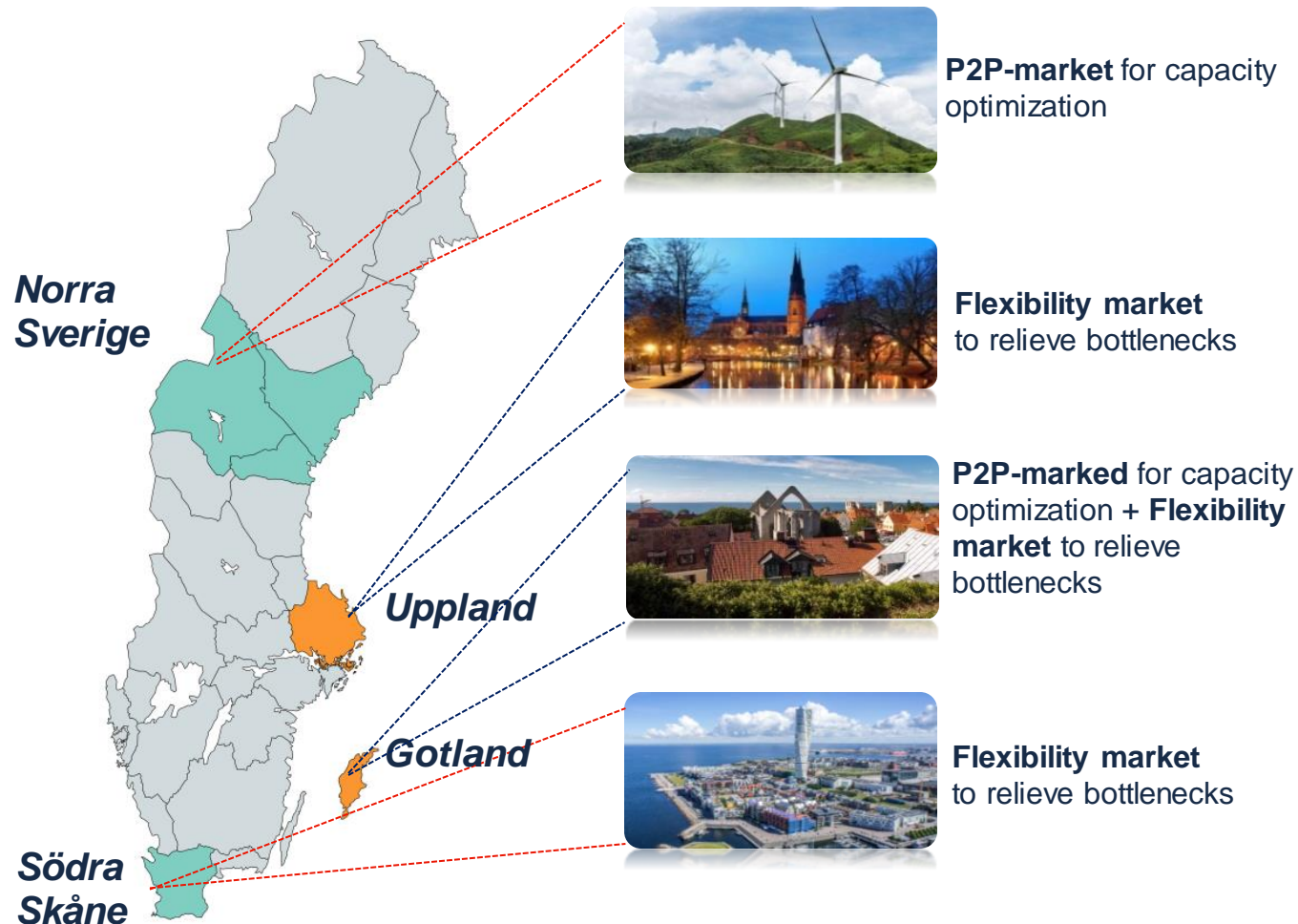


Lokal Markets

- Local markets for flexibility will help relieve the grid of congestions
- Awaiting of avoiding timely and costly grid reinforcements (10-15 years)



CoordiNET has four Swedish demo sites, and a wide collaboration



The Swedish demonstration of CoordiNET started winter 2019
- One year before the other countries (Spain and Greece)

SWITCH – a new way to manage grid capacity

The objective



Switch has the objective to change the way grid capacity is managed by unlocking flexibility in the system. The project is supported by an EC-funded project called CoordiNET.

The solution

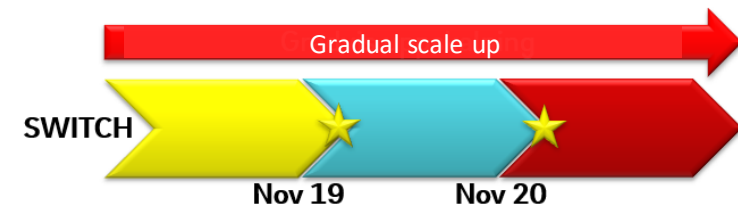


A marketplace where capacity can be traded will ensure that the grid can be run more efficiently, and avoid critical congestions.

The plan



During the winter of 2019/2020 the market will go live in a small scale. The following year the market will expand to a larger scale, taking on the challenge of congestion management.



Flexibility service providers now and in the near future

Small scale demo

Bornholm Energi & Försyning – Conventional generation

E.ON Värme – Heat pumps in Malmö

Kraftringen Värme – Heat pumps in Lund

Ystad Energi – Reserve generation

Medicon Village – Heating & cooling load aggregator

Total: ~60 MW

Future

Electric vehicle charging

Energy storage units

Household heating flexibility aggregators

Manufacturing industries with flexible processes

Commercial & multi-housing facilities

The key to unlock flexibility is to involve non - energy business actors as well as traditional in business actors