

CoordiNet

Participants in Sweden: Vattenfall Eldistribution, E.ON Energidistribution, Svenska Kraftnät, Energiforsk, Expektra, Uppsala kommun, Gotlands energi, Upplands energi.

IEA categories: Distribution management

Time plan: Started in January 2019 and will run for 3,5 years

Web: <https://www.coordinet-project.eu/>

Contact persons: Mats Nilsson, Energiforsk

Locations in Sweden: Uppland, Gotland, Skåne and Västernorrland

Possible to visit: No physical installations

Background

CoordiNet is an EU financed project that aims to demonstrate how DSOs and TSOs shall act in a coordinated manner and use the same pool of resources to procure grid services in the most reliable and efficient way. This will be done through the implementation of large scale "TSO-DSO-Consumer" demonstrations, in cooperation with market participants and end users. There will be large scale demonstration projects carried out in Sweden, Greece and Spain.

In Sweden the demand for electric distribution capacity is growing faster than the electricity grid can expand. New industrialization, historically high housing construction and increased use of electricity for a fossil-free transport sector and industry are behind the increasing demands on capacity. The purpose of CoordiNet is to establish different collaboration schemes between transmission system operators (TSOs), distribution system operators (DSOs) and consumers to contribute to the development of a smart, secure and more resilient energy system. Special emphasis will be on the analysis and definition of flexibility in the grid and at every voltage level, ranging from the TSO and DSO domain to consumer participation.

Implementation of the project

CoordiNet aims to enable flexibility in the grid without affecting the customer's comfort or profitability. The project will partly provide answers to a number of issues relating to both technology and business and partly examine what incentives are needed for households and industries to contribute with flexibility. Demonstration facilities with local marketplaces for more efficient use of the electricity grid will be implemented in four areas in Sweden: Uppland, Gotland, Skåne and Västernorrland.

The Swedish pilot

In the Swedish pilot, two different flexibility markets will be tested in four areas. Each of the market solutions will be tested in two stages, a small-scale Demo 1 followed by a larger scale Demo 2. The two flexibility markets are described below.

Congestion management

In this part of the pilot, a marketplace is developed, where electricity customers and producers can offer flexibility at a day-ahead market. The two types of flexibility bids that are available are for customers to decrease their consumption and for producers to increase their production. The DSO then has the ability to activate these bids if a high load situation with congestion arises.

The pilot for this flexibility market will be carried out in southern Skåne, Gotland and Uppsala.

Demo 1

In Demo 1, five utilities each will participate in Skåne, Gotland and Uppsala, in addition to E.ON and Vattenfall. A common marketplace solution will be launched and be used for both these areas (and later on Gotland), even if the flexibility is to be sold locally. While the need for flexibility varies depending on weather and temperature, the demonstration will be carried out regardless of weather conditions.

Demo 1 runs between November 2019 and March 2020.

Demo 2

Demo 2 will be a larger scale version of Demo 1, where approximately 50 to 100 different utilities are expected to participate. In Demo 2 there will be a broader spectrum of participants, and aggregators are expected to take part in order to allow for smaller players to take part.

This demo will be run in Skåne by E.ON, in Uppsala by Vattenfall Eldistribution and in Gotland by Gotland Elnät AB. The identities of other participants are yet to be decided.

Peer to peer

A peer to peer market is established to allow for different producers to trade capacity with each other. Mainly depending on weather factors, different production types deliver different output, which in certain situations lead to a suboptimal use of production ability. An example of such a situation could be a weather pattern which allows for a high amount of wind power production, while hydro production can be stepped down without any need for spillage. In that case, hydro production can be stepped down, and the capacity that is made available in the power grid can be sold to allow for wind power to produce at a higher rate.

Demo 1

The first demo will be performed in Sollefteå in April-May 2020. GEAB is responsible for the Gotland demo and E.ON for the one in Sollefteå.

Demo 2

The second demo will be run one year later in April-May 2021, in Sollefteå and Gotland. This time the number of participants will be increased in comparison to the first demonstration.

Benefits

Increasing demands on capacity is a challenge for Sweden and can be a threat to Sweden's competitiveness. CoordiNet aims to contribute to a smart, secure and more resilient energy system through demonstrating cost-efficient model(s) for electricity network ancillary services that can be scaled up to include networks operated by other TSOs and DSOs, and provide the foundations for the further implementation of the already approved and future network codes, particularly on demand-response and storage.

Scalability

CoordiNet includes large-scale demonstrators from the start, that will serve as a model for similar solutions in other locations.

Interoperability

CoordiNet will build upon the existing grid with new business models and services.

Investment horizon

CoordiNet is a large-scale project, that will involve investments in large-scale testbeds. The project participants think that the system will lead to a more flexible power system in the future, which will pay back these investments in the long run.

International potential

The CoordiNet mechanisms will be tested at three large-scale demonstration projects in ten different locations in Spain, Sweden and Greece. Lessons learned from these large field demonstration projects will be used to design the structure of a joined pan-European coordination platform.