



# Grid-Friends

## Demand response for grid-friendly quasi-autarkic energy cooperatives

“ We aim to contribute to the adoption of renewable generation paired with intelligent demand response for energy cooperatives

The energy transition towards (fluctuating) renewable electricity generation requires more flexible demand response. This demand response is possible, due to decreasing storage prices, flexible thermal loads, electric vehicle charging schedules etc., but it requires intelligent coordination. Since centralized solutions are intractable due to privacy concerns, limited computational scalability and the individuals concern to maintain decisional autonomy, this project proposes decentralized coordination in quasi-autark energy cooperatives, striving for operational energy balance. This German-Dutch research project develops and evaluates the coordination mechanisms and the technological platform for the energy cooperative, to achieve cost efficiency or maximum autarky by shared exploitation of storage and other flexible resources. A transnational energy market aims to further push cost efficiency when the two pilot cooperatives are more widely replicated and adopted in future scenarios.



**ERA-Net Smart Grids Plus | From local trials towards a European Knowledge Community**



This project has received funding in the framework of the joint programming initiative ERA-Net Smart Grids Plus, with support from the European Union's Horizon 2020 research and innovation programme.

### Project Duration

01.05.2016 - 28.02.2019

### Project Budget

Total Budget: € 2,416,723.-

Funding: € 1,527,596.-

### Project Coordinator

Stichting Centrum Wiskunde & Informatica (NL)

### Project Partners

- Fraunhofer - Institut für Techno und Wirtschaftsmathematik ITWM (DE)
- Evohaus GmbH (DE)
- Metabolic (NL)
- Stichting Schoonschip (NL)

### Project Website

[www.grid-friends.com](http://www.grid-friends.com)

### Contact

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## Main Objectives

This project aims to solve the challenges that housing cooperatives face when trying to jointly exploit local energy resources. The ultimate ambition is to develop **replicable blueprints of system design decisions** that contribute to the adoption of renewable generation paired with **intelligent demand response** for energy cooperatives that become able to support themselves and to provide green energy or system services to their surrounding. With these ambitions the project results facilitate the energy revolution in a sustainable, grid-friendly way. The specific goal is to enable demand response by orchestrating the usage of storage and flexible (thermal) loads with renewable generation, and to test and confirm that developed coordination processes are acceptable and practical at demonstration sites.

## Main Results

- A software system for local energy cooperatives with a multi-tier architecture (appliance - EMS - cooperative platform).
- Incentives for collaborative use of flexibilities.
- A vision of future market integration.
- Pilot validation, experimentation and testing.



SPECTRAL UTILITIES



This project is part of the 1st Joint Call for transnational RDD projects of the ERA-Net Smart Grids Plus initiative. More than EUR 31 million of funding have been made available to 21 projects from 19 regions/countries.

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Smart Grids Plus**