A novel smart grid architecture that facilitates high RES penetration through innovative markets towards efficient interaction between advanced electricity grid management and intelligent stakeholders

Fact Sheet

Project Information

**FLEXGRID**

Grant agreement ID: 863876

Funded under H2020-EU.3.3.
H2020-EU.3.3.4.

Overall budget € 3 889 056,25
EU contribution € 3 889 056,25

Coordinated by
INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS
Greece

Start date
1 October 2019

End date
30 September 2022

Project description

Flexibility to energise future grid architecture

A holistic power system architecture includes all electrical equipment, customer plants and the market. All merged into one single structure, this ensures a reliable,
Objective

Future smart grids require the effective interaction between energy markets and electricity grid management systems in order to introduce new services and mitigate risks introduced by high RES penetration. FLEXGRID envisages the orchestration and integration of: i) advanced electricity grid models and tools, ii) flexibility assets’ management tools, and iii) data analytics and accurate forecasts of the various markets and RES production, in order to guarantee cost-effective and stable electricity grids.

Towards this end, FLEXGRID project proposes a holistic future smart grid architecture able to accommodate high RES penetration through the advancement, interaction and integration of: i) innovative models that are based on recent advances in game theory in order to quantify and highly improve the trade-off between the various future energy markets’ requirements (Real Time, Efficient, Strategy Proof, Competitive, Scalable, Fair and Privacy Protecting) and guarantee, theoretically and in practice, the “fairness” of the equilibrium points that energy markets reach, ii) grid system models that use optimization theory to achieve more efficient market clearing and Optimal Power Flow (OPF) algorithms to achieve scalability, in a way that must also be Low Overhead, Multi-period, Robust and Network Upgrade Planning Aware, and iii) innovative Business Models through the use of artificial intelligence, which can be exploited by modern Energy Service Providers (ESPs) and RES Producers (RESPs) to achieve economic and operational benefits through their efficient interaction with FLEXGRID’s advanced markets and electricity grid models.

FLEXGRID will help: i) DSOs/TSOs manage safely and at low cost their electricity grid by interacting with ESPs and RESP by interacting with ESPs and RESP through novel flexibility market procedures, ii) modern ESPs become more competitive and sustainable, and iii) RESP optimally compose and exploit their production in a risk-averse manner by making their RES generation dispatchable.
Programme(s)
Topic(s)
Call for proposal
H2020-LC-SC3-2019-ES-SCC

Funding Scheme

Coordinator

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Participants (12)

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SMART INNOVATION NORWAY AS
Norway
EU contribution
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Croatia
EU contribution
€ 243 750
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Last update: 27 August 2021
Record number: 225171

Permalink: https://cordis.europa.eu/project/id/863876