ENERGY STORY:

WiseGRID: defining energy democracy

The WiseGRID project supports energy communities and small energy generators in a successful energy transition towards distributed, sustainable energy systems and offers tools and practices for a more sustainable pattern of energy consumption.

PLAN. INNOVATE. ENGAGE.

Traditionally, energy has been generated in big power plants, far away from the households where it would finally be consumed. In recent years, the rapid development of renewable power generation has unlocked a change to this one-way street from power generation to the consumption. With technologies such as solar power panels, battery storage and electric vehicles, citizens have the chance to take part in the energy transition and build a clean and sustainable environment together with Pan-European market players. The WiseGRID project was setup to address the question of how each individual can participate in the energy market with fair conditions to be treated as equals among the actors of the energy market.

Contributing effectively to the transition to energy democracy

The WiseGRID project engages public authorities and citizens through a set of solutions, technologies and business models which increase the smartness, stability and security of an open, consumer-centric European energy system that ultimately empowers consumers. More specifically, the project developed 9 different tools, each concentrating on optimising specific technology.

With the **WiseCOOP** tool consumers and local communities can achieve better energy deals without confusing paperwork and bureaucratic hurdles. It provides an easy access through new innovations to a wider group. One example is Virtual Power Plants (VPP) which coordinate the data of several small power generators like rooftop solar panels through the internet to make them as powerful as traditional power plants whose generation data is usually coordinated by TSOs.

WiseCORP enables citizens to analyse their energy usage and supports the increase of self-consumption, to become an active and smarter energy player through the integration of sensors, device interoperability, energy tariffs, demand forecasts and the optimisation of asset sizes and types to reduce investment costs and environmental impact.

WiseHOME is similar to WiseCORP but adapted to individual domestic consumers and prosumers allowing them to become active energy players. Houseowners can monitor their consumption and production in real time, which helps them to adjust their behaviour to the current grid tariffs and traded energy prices to reduce the energy billing. This reduction of costs is supported by alerts, tips and price information provided by the application tools and ends up in optimally controlled smart consumer devices such as electric vehicle charging points, batteries, water heating and solar panels.

WiseEVP and Vehicle to grid (V2G): These tools support electromobility and benefit consumers in providing a good solution for increasing the use of electric cars. The tools inform the users which car should be charged next depending on the current offered energy source or which car battery is charged enough and ready to be used. The aim is that every electric vehicle is fully charged through renewable energies, decreasing related GHG emissions and the number of cars

with low battery charge in the fleet. The citizens can share electrical vehicles via apps and participate in the energy community redesign of their neighbourhood.

WGSTAAS/VPP is a tool for energy storage. This tool allows the consumers/prosumers to easily offer their unused storage capacity to the larger market. In addition, a complementary service will allow consumers/prosumers to easily combine their individually small PV energy generation capacities and offer them to the market in the form of an aggregated, large Virtual Power Plant (VPP) to have a competitive total power generation product offer on the market.

WG IOP and WGCOCKPIT are tools which support Distribution System Operators by providing IT interoperability and increased monitoring capabilities thanks to digitalisation, enabling improved customer service.

The project was run with 5 real life demonstrations - in Belgium, Italy, Spain, and Greece - under different technical, climatological, regulatory, legislative, and social conditions. The demonstration sites finally involved more than 1700 users, 700 equipped with new smart meters and applications, 23 various batteries types totalling more than 200kWh of installed capacity, 50 heat pumps, 72 electrical vehicles, 12 charging stations, 2 CHP units and various renewable energy sources such as Hydro power in Terni, wind turbines in Ghent and a wide deployment of solar panels through all demo sites.

Impact

The project successfully demonstrated how easy local communities, small business and even individual citizens can take active part on a democratic energy market. This active participation of citizens for the energy system of the future can be achieved through the coordinated collaboration of a larger number of small partners. WiseGRID has set the path for future projects involving consumer engagement by contributing valuable information for developing policy guidelines on sustainable citizen-driven energy communities.

> **Project Benefits**
> - Improved network management
> - Decrease carbon emissions
> - Reduced Energy Bill
> - Improved Social Acceptance

Energy communities will give the possibility to sell self-generated energy inside the neighbourhood, without major interference from grid operators or marketplaces. WiseGRID is paving the way for improved services and attention to the customers of the DSO's, developing scalable innovative methodologies which secure the transfer of the solutions all over Europe.

Keywords: Energy communities, Energy storage, EV, smart meters, RES

More info at: http://www.wisegrid.eu/

Note: Project benefits based on specific criteria outlined in ETIP SNET monitoring exercise

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