SP Energy Networks deploys Great Britain’s first USEF compliant flexibility market with GridOS® Markets Software

DNO/DSO
SP Energy Networks

Status
Release 1 Market Live

Customer Challenges
Today’s rise of Distributed Energy Resources (DERs) is challenging distribution networks’ abilities to maintain grid safety, reliability, and operational performance. A local flexibility market is one promising way to rise to the challenge of growing DER penetration. In order to manage local flexibility markets in a competitive and transparent manner, Distribution System Operators (DSO) will need a reliable, resilient, and effective platform to engage customers and communities.

As a distribution and transmission network operator, SP Energy Networks keeps electricity flowing to over 6M customers across 3.5M homes and businesses throughout Central and Southern Scotland, North Wales, Merseyside, Cheshire, and North Shropshire. Project FUSION is a key element in facilitating SP Energy Networks' move from Distribution Network Operator (DNO) to DSO.

Project Brief
As an Ofgem Network Innovation Competition (NIC) funded project, FUSION trials commoditised local demand-side flexibility through a structured and competitive market, based on the Universal Smart Energy Framework (USEF). USEF is a framework that defines the basics for a unified smart energy market through a standardised and unified messaging system and framework design between DSO and Aggregators. SP Energy Networks partnered with Opus One Solutions to deliver a fully USEF compliant FUSION Flexibility Platform (FFP), through configuration of Opus One’s GridOS® markets software to demonstrate how the introduction of a local flexibility market can help DSOs better manage their networks. The FFP represents a comprehensive energy trading platform pilot that demonstrates the whole-system process in which flexibility needs are forecast, and flexibility services are evaluated, scheduled, and activated within a DSO area.

Solutions
Opus One Solutions developed and deployed its GridOS markets software that coordinates all market, network and asset data into one location to optimise cost of procuring flexibility services.
Solutions (Continued)

In project FUSION, the markets tool enables FFP the following functions of a DSO flexibility market:

- Contract Management - Manage and approve flexibility contracts between SP Energy Networks and market participants for secure, sustain, and dynamic flexibility services. This function can also be utilised to create, manage, and approve flexibility contracts from participants for all types of flexibility services through a single dashboard view.
- Programme Management - Define market operation, including specifying constraint management zones (congestion points), registering market participants (aggregators) and their assets (connections), determining market event timings (e.g. day ahead, intraday, contract service), and exchange framework (USEF).
- Market Optimisation and Scheduling - Allow operators to accurately determine the location of constraints on the system and use flexibility to maintain grid stability, reliability, and resiliency.
- Settlement - Provide the operator a dashboard to validate flexibility trades and view aggregated and detailed flexibility traded through the market. Through the dashboard, the DSO user can review the performance of each aggregator, the constraints on the DSO network system, and the trades that resolve those network constraints by service type.
- Integration and Protocols - Ingest SP Energy Networks' forecasts and USEF Compliance for APIs with aggregators for market operation.

Benefits from Deployment

The deployment of GridOS markets software in FUSION enables DNOs and all market actors to release the value of flexibility in a distribution network. The project aims to unlock the following benefits:

- Facilitate aggregator participation in DSO operated markets and utilise flexibility for grid safe, reliable and resilient operations.
- Alleviate localised network congestion without requiring costly and time-consuming network reinforcement.
- Empower customers to commoditise their flexibility and receive monetary benefits with new routes to market for existing and emerging flexibility providers in a distribution network.
- Optimise the use of renewables and low carbon technology integration, reducing carbon emissions.

Next Steps

Project FUSION began testing its end-to-end flexibility market with two aggregators in September 2021. Following completion of testing, the FFP built by Opus One's GridOS markets software was successfully able to facilitate day ahead and same day trading of flexibility across two substations in East Fife. The FFP developed in Project FUSION represents the first stage in a scalable platform that meets SP Energy Network's needs as it transitions to DSO. In an upcoming release of the FFP, the market will provide granularity at multiple voltage levels, including extending from the 33 kV level into the LV network. Opus One and SP Energy Networks may explore the extension of the FFP to other areas, or the inclusion of other flexibility market products. The FFP demonstrates a key achievement in applying the USEF framework, and both Opus One and SP Energy Networks expect this to provide significant learnings on the evolution of USEF that will benefit the industry in the future.

For more information on Opus One’s products please contact us at info@opusonesolutions.com