A Flex-market Design for Flexibility Services through DERs

The high penetration of distributed energy resources (DERs) will significantly challenge the power system operation due to their intermittent characteristic. In order to utilize the DERs as economically efficient as possible in the distribution grid, an Aggregator-based Flex-market is proposed in this paper. With the brand new notion of Flexibility Clearing House (FLECH), the proposed Flex-market has the ability to promote small scale DERs (up to 5MW) to participate in flexibility services trading. Accordingly, efforts to relieve the congestions in local grid areas, the contractual flexibility services of DERs are stipulated accommodating the various requirements of DSOs. The trading setups and processes are illustrated in details as well. Additionally, the demonstration diagram of Flex-market is also introduced in this paper. The diagram is utilized to test the feasibility and robustness of the market solutions.