

Harmonizing Fluctuating Renewable Energy and Flexible Demand Resources: A Smart Grid Solution

A short abstract: Recently, the rapid growth of renewable generation poses significant challenges for power system secure and economic operations. Nowadays, the total installed capacities of wind and solar power generations in China both rank the 1st all around the world. But due to inherent stochastic nature of renewable energy generation, a large amount of wind and solar power was curtailed, which induced great economic loss.

With the development of smart grid and information technologies, one possible approach to tackling these challenges is to aggregate the distributed flexible resources in demand side (e.g., flexible loads, distributed generation and energy storage) to participate in the optimal operation of power grid. This talk will introduce a solution for flexible demand resources participating in operations of smart grids. Moreover, necessary policies and mechanisms to fulfill this vision in deregulated environment are discussed in this presentation.

Bio: Yi Ding is a Professor in the College of Electrical Engineering, Zhejiang University (ZJU), also a scholar of Thousand Talent Program for Young Outstanding Scientists of China. Before he joined in ZJU, he was an Associate Professor (permeant position) in Technical University of Denmark (DTU), Denmark. He also held academic positions in University of Alberta, Canada and Nanyang Technological University, Singapore. He was also a Consultant as Energy Economist for Asian Development Bank in 2010. He is the executive director of the Applied Energy UNiLAB (Smart Grid Market Mechanism, SGM2). He is an editorial member of 5 international journals including Applied Energy, Electric Power System Research, Journal of Modern Power Systems and Clean Energy, Intelligent Industrial Systems, Protection and Control of Modern Power Systems. He is also a guest editor for the special sections of IEEE Trans. on Power Systems and IEEE Trans. on Industrial Electronics. Dr. Ding is a member of IEC working groups for micro-grid standards. His research areas include power system planning and reliability evaluation, smart grid and complex system risk assessment.