



## Distributed Cooperative Control System for Smart Microgrids

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This paper presents a decentralized control method for Electronically Interfaced Distributed Generations (EI-DGs) that controls their output frequencies, power generations, and voltages during grid-connected, islanding, and synchronizing modes. The proposed control system utilizes droop control to quickly balance generation and demand after sudden disturbances. It utilizes distributed cooperative control to stabilize the system frequency and voltage, and also to distribute the generation among DGs. Furthermore, the proposed control system adjusts the frequency and voltage to reconnect the microgrid to the main grid by utilizing only local measurements from the neighboring DGs. The proposed control system is verified on a modified IEEE Standard 399-1997 test system using MATLAB/SIMULINK and the advantages and disadvantages of the proposed method are discussed according to the results.



This material is based upon work supported by the National Science Foundation under Grant No. IIA-1301726. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.