

## عنوان مقاله:

Bulk Virtual Power Plant, a Novel Concept for Improving Frequency control and Stability in Presence of Large Scale RES

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## خلاصه مقاله:

Frequency stability in power systems is essential to maintain supply quality and security. There are some challenges for maintaining frequency in its required limits with presence of Renewable Energy Sources (RES) in primary energy sources for electric power generation. This paper investigates a new control approach to consider bulk amounts of RES generation in frequency control and regulation of power systems when the RES power generation is the main generation of the system. In this regard the concept of Bulk Virtual Power Plant (BVPP) is introduced to cooperate with Transmission System Operators (TSO) and Distribution System Operators (DSO) under a new control approach to improve frequency characteristic of power system without increasing capacity of energy storage systems. The proposed control approach is applied to hybrid power generation systems. The effectiveness of these methods was verified using MATLAB/SIMULINK software. The simulation results indicate that the proposed control scheme works desirably and thereby large amounts of RES can effectively participate in Load Frequency Control (LFC).

## کلمات کلیدی:

Bulk Virtual Power Plant, Frequency control, Transmission system operator

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