

## عنوان مقاله:

Thermal Comfort-Based Heat Pumps Utilization for Wind Power Uncertainty Management

## محل انتشار:

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## خلاصه مقاله:

Demand response programs (DRPs) are considered a promising solution to address the variability and uncertainty of renewable generations. Heat pumps (HPs) as responsive loads are prone to participate in DRPs. HPs participation in DRPs will lead to changes in the buildings' temperature and, correspondingly, the occupants' thermal comfort (OTC). If these programs are not planned wisely, HPs owners' tendency to participate in DRPs will reduce, and power system operators will be deprived of the DRPs benefits. This work proposes a new ASHRAE55-based framework to guarantee the OTC. Information gap decision theory (IGDT) is also used to address the uncertainty of renewable generation. Then, an objective function is defined to simultaneously optimize the power consumption of HPs and the uncertainty of wind turbine generators. To find the optimal solution, the standard and adaptive fuzzy PSO algorithms are used. For determining the participation of HPs in the DRPs, there is a conventional scenario in which the temperature of each residence should be limited to the range defined by the occupant(s). The simulation results verify the superiority of the proposed scenario over the conventional one.

## کلمات کلیدی:

renewable energy, congestion, uncertainty management, distribution system, IGDT

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