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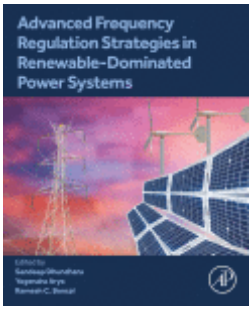

Chapter 12 - Demand side energy management algorithms integrated with the IoT framework in the PV smart grid system

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Abstract

The smart grid revolution in the electric power sector will play a major role in the future. In the electric power system, the combination of new technology and communication infrastructure makes the grid smarter. To incorporate intelligence into the grid, many technological challenges must be solved, including those posed by energy storage systems, the integration of renewable sources, communication, protection, control, and demand-side

management with customer involvement. Considering the rising need for electricity, one of the primary operational difficulties in the power system is balancing power generation to the constantly shifting load. Under the smart grid, utilities have realized that through demand side management and different demand response (DR) efforts, customer participation may be efficiently used for this balancing mechanism. The two-way communication between supply and demand can be successfully implemented with the help of smart grid intervention. Customers participate in DR schemes by actively reducing or shifting loads from peak to nonpeak hours concerning the pricing scheme. Therefore, it is essential to develop new demand response strategies for the smart grid, taking into consideration all features of the utility provider and the customers.

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