Smarter Energy

From Smart Metering to the Smart Grid

This book presents cutting-edge perspectives and research results in smart energy spanning multiple disciplines across four main topics: smart metering, smart grid modeling, control and optimization, and smart grid communications and networking.

Chapters from an international panel of experts in the field cover: privacy-preserving data aggregation in smart metering systems; smart price-based scheduling of flexible residential appliances; smart tariffs for demand response from smart metering platforms; decentralized models for real-time renewable integration in future grid; distributed and decentralized control in future power systems; multiobjective optimization for smart grid system design; frequency regulation of smart grid via dynamic demand control and battery energy storage systems; distributed frequency control and demand-side management; game theory approaches for demand side management in the smart grid; energy storage systems and grid integration; overview of research in the ADVANTAGE project; big data analysis of power grid from random matrix theory; a model-driven evaluation of demand response communication protocols for smart grid; energy-efficient smart grid communications; and cyber security of smart grid state estimation.

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