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Collana	Power Electronics and Power Systems
Altri autori (Persone)	IlicMarija D XieLe LiuQixing
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	The Case for Engineering Next-Generation IT-Enabled Electricity Services at Value -- The Tale of Two Green Islands in the Azores Archipelago -- Electrical Networks of the Azores Archipelago -- Generation and Demand Characteristics of the Islands of Flores and Sao Miguel -- Conventional Generation Dispatch Methods in Systems with Intermittent Resources -- Multi-Scale Models for Decomposing Uncertainties in Load and Wind Power -- Look-Ahead Model-Predictive Generation Dispatch Methods -- Assessing the Ability of Different Types of Loads to Participate in Adaptive Load Management -- Look-ahead Model-Predictive Generation and Demand Dispatch for Managing Uncertainties -- Counterexamples to Commonly Held Assumptions on Unit Commitment and Market Power Assessment -- The Role of Electric Vehicles in Making Azores Islands Green -- Optimal Placement of Wind Power Plants for Delivery Loss Minimization -- Toward an Extended AC OPF-Based Approach to Wind Power Integration and Pricing -- Modeling and Control Framework to Ensure Intra-Dispatch Regulation Reserves -- Stabilization and Regulation of Small Frequency Fluctuations by Means of Governor and Flywheel Control -- The Role of Enhanced Voltage Control in Stabilizing Dynamics of Electric Energy Systems -- Small Signal Stability of Electric Power Systems on the

Azores Archipelago -- Toward Reconfigurable Smart Distribution Systems for Differentiated Reliability of Service -- Transient Stabilization in Systems with Wind Power -- Generation Planning under Uncertainty with Variable Resources.

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Sommario/riassunto

Engineering IT-Enabled Electricity Services: The Tale of Two Low-Cost Green Azores Islands covers sustainable energy services to customers - a balanced choice and coordination of energy generated by traditional and alternative sources. The "Green Islands" project represents a decade of work by over a dozen researchers who have developed a model designed to utilize the potential of distributed clean resources. The key is the proper use of Information Technology (IT). Sited on two islands in the Azores, the project developed the model of careful forecasting of demand and supply, down to the minute, coordinating the output of conventional power plants, wind energy, fly wheels, hydroelectricity, demand reduction, and even plug-in electric vehicles to take full advantage of the clean resources available. This contributed volume presents methods for predicting variable resources, such as wind power generation, and analyzes the achievable accuracy of these predictions. Throughout this book, contributors show that the cost of serving customers in systems with highly uncertain generation will depend to a very large extent on how well the predictions are done. Therefore, the supporting IT technologies based on predictive models become critical to avoid the need for fast-responding storage. The model the authors have developed could change the way power portfolios are built. A new perspective for optimization of green energy is presented in this book. Data provided with the book represents a repository of real-world electric energy systems and its IT-enabled smarts.

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