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Titolo	Grid modernization - future energy network infrastructure : overview, uncertainties, Modelling, optimization, and analysis // Mohammadreza Daneshvar, Somayeh Asadi, Behnam Mohammadi-Ivatloo
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Descrizione fisica	1 online resource (XVI, 280 p. 75 illus., 74 illus. in color.)
Collana	Power Systems, , 1612-1287
Disciplina	621.319
Soggetti	Smart power grids
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Overview of the grid modernization and smart grids -- Modernizing the energy customer side -- Technical and theoretical analysis of the future energy network modernization from various aspects -- Advanced communication protocols in modernizing of the future energy grids -- Energy trading possibilities in the modern multi carrier energy networks -- Probabilistic modeling and optimizing of the modern grids with a full share of RERs: robustness and opportunistic analyzing of the system -- An application of the General Algebraic Modeling System (GAMS) in the optimization of the modern grids.
Sommario/riassunto	This book presents theoretical, technical, and practical information on the modernization of future energy networks. All the basic requirements covering concepts, modeling, optimizing, and analyzing of future energy grids with various energy carriers such as electricity, gas, heat, and water, as well as their markets and contracts, are explained in detail. The main focus of the book is on modernizing both the energy consumers and the energy producers and analyzing various aspects of grid modernization such as reliability, resiliency, stability, and security. Coverage includes advanced communication protocols and solution methods for the Internet of Energy (IoE) infrastructure and energy trading in future energy grids with high/full share of renewable energy resources (RERs) within the transactive energy (TE) paradigm. Probabilistic modeling and optimizing of modern grids will be

evaluated using realistic case studies considering the economic aspects of multi-carrier energy markets. This book will be welcomed as an important resource by researchers and postgraduate students studying energy systems, as well as practicing engineers working on modernizing energy grids and the design, planning, scheduling, and operation of smart power systems. Proposes practical solutions for solving the challenges of modern multi-carrier energy grids; Examines various types of energy storage systems and distributed energy resources (DERs) with an emphasis on renewable energy resources (RERs); Provides comprehensive mathematical models for optimizing of future modern multi-carrier energy grids.
