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Nota di contenuto	Cover; Title Page; Contents; Preface; Chapter 1 Comparative Risk Assessment for Energy Systems; 1.1 Introduction; 1.2 Analytical Approach and Methodology; 1.2.1 Severe Accident Database; 1.2.2 Severe Accident Definition; 1.2.3 Consideration of Full Energy Chains; 1.2.4 Normalization and Allocation of Damages; 1.2.5 Simplified Probabilistic Safety Assessment for Nuclear Power Plants; 1.3 Overview and Contents of Ensad; 1.4 Comparative Analysis of Energy Chains; 1.4.1 Aggregated Indicators; 1.4.2 Frequency-Consequence Curves; 1.5 Conclusions and Recommendations; 1.5.1 Comparative Aspects 1.5.2 Selected Future DevelopmentsReferences; Further Reading; Chapter 2 Large-Scale Electricity Transmission Grids: Lessons Learned from the European Electricity Blackouts; 2.1 Introduction; 2.2 Basic Mechanism of Electric Power Transmission in a Large Grid; 2.3 Power Flows in Interconnected Grids; 2.4 The European Interconnected System-the UCTE System; 2.5 Management of the System; 2.5.1 Before Opening of the Market; 2.5.2 In the Open Market; 2.6 The Italian Blackout 2003; 2.6.1 Introduction; 2.6.2 Factual Sequence of Events-Blackout September 28, 2003 2.6.3 Comments on and Interpretations of the Events/Findings2.7 The System Disturbance November 4, 2006; 2.7.1 Situation and Actions before the Disturbance; 2.7.2 Evolvement of the Disturbance; 2.7.3

Consequences of the Opening; 2.7.4 Failures and Mistakes that Led to this Disturbance; 2.8 Unbundling and Decentralization-Features in Contradiction to Security; 2.9 Conclusions; References; Further Reading; Chapter 3 Interdependent Energy Infrastructure Simulation System; 3.1 Introduction; 3.2 leiss Simulation Concepts; 3.3 The Complexity of Multiple Infrastructures
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4.8 ConclusionReferences; Further Reading; Chapter 5 Self-healing and Resilient Energy System; 5.1 Introduction; 5.2 The Bigger Picture; 5.3 Infrastructures Under Threat; 5.4 A Stressed Infrastructure; 5.5 Where are we and How did we Get Here?; 5.6 Chief Grid Problems; 5.7 Options and Possible Futures-What will it Take to Succeed?; 5.8 The Road Ahead; 5.9 Cost and Benefit; 5.10 Next Steps; Acknowledgments; References; Further Reading; Chapter 6 Nano-enabled Power Source; 6.1 Scientific Overview; 6.1.1 High Power Cells; 6.1.2 High Capacity Cells
6.2 Global Effort on Nano-Enabled Power Source Technologies

Sommario/riassunto

Energy Systems Security features articles from the Wiley Handbook of Science and Technology for Homeland Security covering topics related to electricity transmission grids and their protection, risk assessment of energy systems, analysis of interdependent energy networks. Methods to manage electricity transmission disturbances so as to avoid blackouts are discussed, and self-healing energy system and a nano-enabled power source are presented.
