

Contents

Author Biographies	xi
Foreword	xxv
Preface	xxvii
Introduction	xxx

Part I

What is Changing, What are the Implications 1

1. What is the Future of the Electric Power Sector? 3

Fereidoon P. Sioshansi
*Menlo Energy Economics, Walnut Creek, CA,
United States of America*

2. Value of an Integrated Grid 25

Clark W. Gellings
*Electric Power Research Institute, Palo Alto, CA,
United States of America*

3. Microgrids: Finally Finding their Place 51

Chris Marnay
*Microgrid Design of Mendocino, Comptche, CA,
United States of America*

4. Customer-Centric View of Electricity Service 75

Eric G. Gimon
Energy Innovation LLC, San Francisco, CA, United States of America

5. The Innovation Platform Enables the Internet of Things 91

John Cooper
*Siemens PTI, Business Transformation & Solution Engineering, Austin, TX,
United States of America*

6. Role of Utility and Pricing in the Transition 109

Tim Nelson*, Judith McNeill†

*AGL Energy, North Sydney, NSW, Australia; †Behavioral, Cognitive and Social Sciences, Institute for Rural Futures, University of New England, Armidale, NSW, Australia

7. Intermittency: It's the Short-Term That Matters 129

Daniel Rowe, Saad Sayeef, Glenn Platt

CSIRO Energy, Mayfield West, NSW, Australia

Part II

Competition, Innovation, Regulation, and Pricing 151

8. Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence From Texas 153

Varun Rai*, Jay Zarnikau†

*The University of Texas at Austin, Austin, TX, United States of America;

†The University of Texas at Austin and Frontier Associates, Austin, TX, United States of America

9. Rehabilitating Retail Electricity Markets: Pitfalls and Opportunities 175

Ralph Cavanagh*, Amanda Levin†

*NRDC, San Francisco, CA, United States of America; †NRDC Washington, DC, United States of America

10. Residential Rate Design and Death Spiral for Electric Utilities: Efficiency and Equity Considerations 193

Rasika Athawale, Frank Felder

Center for Energy, Economic, & Environmental Policy, Edward J. Bloustein School of Planning and Public Policy, Rutgers University, New Brunswick, NJ, United States of America

11. Modeling the Impacts of Disruptive Technologies and Pricing on Electricity Consumption 211

George Grozev*, Stephen Garner†, Zhengen Ren*, Michelle Taylor†, Andrew Higgins‡, Glenn Walden†

*CSIRO, Clayton, VIC, Australia; †Ergon Energy, Fortitude Valley, QLD, Australia;

‡Dutton Park, QLD, Australia

12. Decentralized Reliability Options: Market Based Capacity Arrangements 231

Stephen Woodhouse

Pöyry Management Consulting, Oxford, UK

13.	Network Pricing for the Prosumer Future: Demand-Based Tariffs or Locational Marginal Pricing?	247
	Darryl Biggar*, Andrew Reeves [†] <i>*Australian Competition and Consumer Commission, Melbourne, VIC, Australia; [†]Former Chairman, Australian Energy Regulator, Hobart, Tasmania, Australia</i>	
14.	The Evolution of Smart Grids Begs Disaggregated Nodal Pricing	267
	Günter Knieps <i>University of Freiburg, Freiburg, Germany</i>	
Part III Utilities of the Future: Future of Utilities		281
15.	New Business Models for Utilities to Meet the Challenge of the Energy Transition	283
	Paul Nillesen*, Michael Pollitt [†] <i>*PwC, Amsterdam, The Netherlands; [†]Cambridge University, United Kingdom</i>	
16.	European Utilities: Strategic Choices and Cultural Prerequisites for the Future	303
	Christoph Burger, Jens Weinmann <i>European School of Management and Technology (ESMT), Berlin, Germany</i>	
17.	Thriving Despite Disruptive Technologies: A German Utilities' Case Study	323
	Sabine Löbbe*, Gerhard Jochum [†] <i>*Reutlingen University, Reutlingen, Germany; [†]Büro Jochum, Berlin, Germany</i>	
18.	The Future of Utility Customers and the Utility Customer of the Future	343
	Robert Smith*, Iain MacGill [†] <i>*East Economics, Sydney, Australia; [†]Centre for Energy and Environmental Markets (CEEM) and School of Electrical Engineering and Telecommunications, UNSW, Sydney, Australia</i>	
19.	Business Models for Power System Flexibility: New Actors, New Roles, New Rules	363
	Luis Boscán*, Rahmatallah Poudineh [†] <i>*Department of Economics, Copenhagen Business School, Frederiksberg, Denmark; [†]Oxford Institute for Energy Studies, Oxford, United Kingdom</i>	

20. The Repurposed Distribution Utility: Roadmaps to Getting There	383
Philip Q. Hanser, Kai E. Van Horn <i>The Brattle Group, Cambridge, MA, United States of America</i>	
21. Distributed Utility: Conflicts and Opportunities Between Incumbent Utilities, Suppliers, and Emerging New Entrants	399
Kevin B. Jones, Taylor L. Curtis, Marc de Konkoly Thege, Daniel Sauer, Matthew Roche <i>Institute for Energy and the Environment, Vermont Law School, South Royalton, VT, United States of America</i>	
22. The Fully Integrated Grid: Wholesale and Retail, Transmission and Distribution	417
Susan Covino, Andrew Levitt, Paul Sotkiewicz <i>PJM Interconnection, LLC, Audubon, PA, United States of America</i>	
Subject Index	435