

Preface

World-wide unprecedented reform and restructuring of the electric power industry has imposed tremendous challenges on the operation of power systems under this new environment. Regardless of the market structures that may emerge in various parts of the world, system security, reliability and quality of supply must be maintained. Faced by an increasingly complicated co-existence of technical and economical considerations, new computational tools and software systems are in great demand by generators, system operators, retailers, and other market participants to meet operating, scheduling, planning, and financial requirements.

In recent years there have been many books published on deregulation of the power industry but most of them placed emphasis on the market structure and policy issues. From an engineering point of view, how to develop effective computational tools for efficiently operating restructured power systems is still a big challenge. During the past several years, with funding from both research council and industry, we have been working on different computational models and methods for operation and control of market-oriented power systems. This book, resulting from these successful projects, covers all the major operational issues, such as scheduling and dispatch, congestion management, available transfer capability calculation, price forecasting and optimal bidding strategies. In addition, a comprehensive review of international research and world-wide industry practice is presented in each chapter before describing our methods, so as to give readers a broader state-of-the-art in this exciting field. Thus this book should be a useful reference for professional managers and engineers involved in the operation and control of market-oriented power systems. It would also be of considerable value to post-graduate researchers.

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Table of Contents

List of Contributors.....	XVII
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1. Operation of Restructured Power Systems

<i>Y.H. Song, X. Wang and J.Z. Liu</i>	<i>1</i>
1.1 System Operation in a Competitive Environment	1
1.1.1 Reliability-related Functions	2
1.1.2 Market-related Functions.....	2
1.2 Effects of Industry Restructuring on System Reliability	3
1.3 New Requirement for Computation Tools and Software Systems in Electricity Markets.....	5
1.4 Outline of the Book.....	7
1.5 References.....	12

2. Modelling and Analysis of Electricity Markets

<i>A. Maiorano, Y.H. Song and M. Trovato</i>	<i>13</i>
2.1 Types of Markets	14
2.1.1 Fundamental Market Structure and Mechanism	15
2.2 Commodity Markets	16
2.2.1 Cash Market.....	17
2.2.2 Futures Market.....	17
2.2.3 Options Market.....	17
2.2.4 Swap Market.....	17
2.2.5 Planning Market	17
2.3 Perfect Competition and Oligopolistic Market	18
2.3.1 Market Equilibrium: The Law of Supply and Demand	19
2.3.1.1 Elasticities of Supply and Demand	21
2.3.2 Perfect Competition.....	22
2.3.3 Classical Theories of Oligopoly	24
2.3.3.1 The Cournot Model	24
2.3.3.2 Isoprofit Curves and Reaction Functions.....	25
2.3.3.3 The Bertrand Model.....	28
2.3.3.4 The Stackelberg Equilibrium	30
2.4 Oligopolistic Electricity Market	31

VIII Contents

2.4.1	Modelling of the Load Demand	32
2.4.2	Evaluation of Company Marginal Cost Functions	34
2.4.3	Presence of Transmission Losses	35
2.4.4	Proposed Model.....	37
2.4.5	Presence of Bilateral Contracts	39
2.5	Case Studies and Results Analysis	40
2.6	Conclusions	46
2.7	References	48
3.	Location-based Marginal Pricing of Electricity and its Decomposition	
	<i>K. Xie and Y.H. Song</i>	51
3.1	Introduction	51
3.2	Spot Pricing Models	52
3.2.1	Review of Some Existing Spot Pricing Models	52
3.2.2	The Decomposition Model.....	53
3.3	Lagrangian Multipliers, Marginal Cost and Spot Price	56
3.4	Integrated Sensitivity Calculation.....	58
3.4.1	Loss Sensitivity	58
3.4.2	Sensitivity Coefficients of an AC Network Model.....	59
3.5	Decomposition Model of Spot Pricing	61
3.5.1	Framework	61
3.5.2	Optimal Spot Pricing	63
3.5.3	Spot Price Decomposition	65
3.5.4	Implementation.....	66
3.6	Features of the Proposed IOSP Model.....	68
3.6.1	Comparison with Existing Models	68
3.6.2	The Inner Connection with Economic Dispatching (ED).....	69
3.7	Numerical Studies.....	70
3.7.1	Case Study 1: Insight View of a 5-bus System.....	70
3.7.2	Case Study 2: IEEE 30-bus System.....	75
3.7.3	Case Study 3: 118-bus System	76
3.8	Summary.....	78
3.9	List of Principal Symbols	79
3.10	References	80
4.	Coordinated Real-time Dispatch of Unbundled Electricity Markets	
	<i>X. Wang, Y.H. Song and M. Tan</i>	83
4.1	Power System Operation	84
4.1.1	Operation in Vertically Integrated Utilities	84
4.1.2	Operation in Competitive Electricity Markets.....	85
4.2	Coordinated Real-time Dispatch through Balancing Mechanism.....	86
4.2.1	Bilateral Contract Market	88
4.2.2	Pool Day-ahead Energy Auction Market.....	88
4.2.3	Pool Ancillary Services Auction Market.....	88
4.2.4	Real-time Balancing Market and Coordinated Dispatch	89
4.3	Mathematical Model of the Proposed Framework.....	91
4.3.1	P Sub-problem.....	91

4.3.1.1	Objective.....	91
4.3.1.2	Equality Constraints.....	92
4.3.1.3	Inequality Constraints.....	93
4.3.1.4	Pricing for Real-time Active Power Dispatch.....	93
4.3.1.5	Meeting Real-time Imbalance of Market under Normal Operating Condition	95
4.3.1.6	Replacement of Operating Reserves.....	96
4.3.1.7	Curtailment of Bilateral Contracts	97
4.3.2	Q Sub-problem	97
4.4	Imbalance Settlement Methodologies	98
4.5	Implementation	99
4.6	Test Results	100
4.6.1	Coordinated Dispatch without Network Congestion	101
4.6.2	Coordinated Dispatch with Network Congestion	102
4.6.3	Comparison Between the RSLP and PDIPLP	104
4.7	Conclusions	105
4.8	References	105
	Appendix A: Primal-dual Interior Point Linear Programming Method	106
5.	Available Transfer Capability Evaluation	
	<i>Y. Xiao, Y.H. Song and Y.Z. Sun</i>	<i>113</i>
5.1	Definition and Application of ATC	113
5.1.1	Definition of ATC	113
5.1.2	Industrial Applications of ATC	115
5.2	Criteria for ATC Evaluation	116
5.2.1	Accuracy.....	117
5.2.2	Dependability	117
5.2.3	High Efficiency	118
5.3	Review of Existing Methodologies for ATC Evaluation	118
5.3.1	Existing Methodologies.....	118
5.3.1.1	Sensitivity Analysis	118
5.3.1.2	Continuation Power Flow	118
5.3.1.3	Optimal Power Flow.....	119
5.3.2	ATC Evaluation in Industry	119
5.3.2.1	EPRI [19].....	120
5.3.2.2	ECAR [20].....	120
5.3.2.3	PJM [7]	120
5.3.2.4	NYISO [21]	121
5.4	Proposed Stochastic Model for ATC Evaluation	121
5.4.1	Overview of Proposed Approach.....	121
5.4.2	Modelling Uncertainties	123
5.5	Formulated ATC Evaluation Model	124
5.5.1	Objective Function	124
5.5.2	Operating Constraints	124
5.6	Proposed Hybrid Stochastic Approach	126
5.6.1	Application of SPR to Deal with Discrete Variables.....	127
5.6.2	Application of CCP to Deal with Continuous Variables	128

5.7	Implementation.....	133
5.8	Case Studies and Interpretation of Results	133
5.9	Conclusions	139
5.10	References	140
	Appendix A: Stochastic Programming with Recourse (SPR).....	142
	Appendix B: Chance-constrained Programming	144
	Appendix C: Line Thermal Limits of IEEE 118-bus System	146
6.	Transmission Congestion Management	
	<i>X. Wang, Y.H. Song and Q. Lu</i>	147
6.1	General Methodologies for Congestion Management	148
6.1.1	Transaction Curtailment	148
6.1.2	Transmission Capacity Reservation	149
6.1.3	System Redispatch	150
6.1.4	Overall Congestion Management Process	151
6.2	International Comparison of Congestion Management Approaches	152
6.2.1	UK Market.....	152
6.2.1.1	Congestion Management in Previous Energy-trading Arrangement.....	152
6.2.1.2	Congestion Management in NETA.....	153
6.2.2	PJM Market in the US	154
6.2.3	California Market in the US [3, 15].....	155
6.2.4	Norway and Sweden Market [8–15]	157
6.2.5	New Zealand Market [15–17]	158
6.3	Real-time Congestion Management across Interconnected Regions	158
6.3.1	Proposed Method for Regional Decomposition OPF	159
6.3.2	Application of the Proposed Method to Congestion Management across Interconnected Regions.....	163
6.3.2.1	Mathematical Model.....	164
6.3.2.2	Sequential Solution versus Parallel Solution	165
6.3.2.3	Global Congestion Management versus Two-level Congestion Management	165
6.3.3	Test Results	166
6.3.3.1	Case 1: Inter-regional Congestion Management.....	166
6.3.3.2	Case 2: Intra-regional Congestion Management.....	169
6.3.3.3	Parameters Selection and Discussion	171
6.4	Conclusions	172
6.5	References	173
	Appendix A: Lagrangian Relaxation Decomposition Approach	174
7.	Dynamic Congestion Management	
	<i>J. Ma, Q. Lu and Y.H. Song</i>	177
7.1	Stability Analysis and Control of Power Systems	177
7.2	Stability-constrained Optimal Power Flow.....	181
7.3	Market-based Dynamic Congestion Management [14–16]	184
7.4	Case Studies and Analysis	193
7.5	Conclusions and Future Work	201

7.6	References.....	202
8.	Financial Instruments and Their Role in Market Dispatch and Congestion Management	
	<i>X. Wang, Y.H. Song and M. Eremia</i>	205
8.1	CfDs and FTRs	206
8.1.1	CfDs.....	206
8.1.2	FTRs	207
8.1.3	How CfDs and FTRs Hedge Price Risks	210
8.2	Spot Market Dispatch and Congestion Management with Individual Revenue Adequacy Constraints.....	211
8.2.1	Impact of Operating Limits on Locational Marginal Prices	211
8.2.2	Formulation of Individual Revenue Adequacy Constraints.....	213
8.2.3	Implementation.....	214
8.2.4	Test Results	216
8.2.4.1	System I: 5-bus System.....	216
8.2.4.2	System II: IEEE 30-bus System.....	216
8.3	Conclusions	220
8.4	References	220
9.	Ancillary Services I: Pricing and Procurement of Reserves	
	<i>M. Rashidinejad, Y.H. Song and M.H. Javidi</i>	223
9.1	Ancillary Services in the Electricity Industry	223
9.1.1	Types of Ancillary Services	224
9.1.2	Market for Ancillary Services	226
9.1.3	General Considerations in England and Wales Ancillary Services Markets	228
9.2	Reserve Provision and Pricing in Power Markets.....	229
9.2.1	Contingency Reserves	229
9.2.2	Reserve Procurement Mechanism	230
9.2.3	Reserve Markets in Several Power Markets	231
9.2.3.1	Reserve Markets in England and Wales	231
9.2.3.1.1	Mandatory Frequency Response	231
9.2.3.1.2	Commercial Ancillary Services	232
9.2.3.2	Reserve Markets in the USA.....	232
9.2.3.2.1	California Markets	232
9.2.3.2.2	New York Markets.....	233
9.2.3.2.3	New England Markets.....	234
9.2.3.2.4	Pennsylvania New Jersey Maryland PJM Markets	234
9.2.4	Research into Reserve Procurement and Pricing	235
9.3	Joint Dispatch for Reserve Provision and Pricing.....	237
9.3.1	Application of JEROD to Deal with Reserve Provision and Pricing	237
9.3.1.1	Physical Constraints.....	239
9.3.1.2	Operational Security Constraints	239
9.3.2	Numerical Case Study	240

XII Contents

9.3.2.1	Six-unit Test System.....	240
9.3.2.2	Contingency Reserve Settlements	242
9.4	Development of Option Pricing Mechanism for Reserve Markets	243
9.4.1	Derivative Securities and Financial Contracts.....	243
9.4.1.1	What Is a Derivative?	243
9.4.1.2	Forward Contracts	243
9.4.1.3	Futures Contracts.....	244
9.4.1.4	Option Contracts.....	244
9.4.1.5	Why Option Contracts are Needed for Electricity and Ancillary Services.....	244
9.4.2	Option Structure and Option Evaluation.....	245
9.4.3	Application of Standard Options for Reserve Procurement and Pricing	247
9.4.4	Case Study and Results Analysis	248
9.5	Reference	250
 10. Ancillary Services II: Voltage Security and Reactive Power Management		
<i>G.A. Taylor, S. Phichaisawat, M.R. Irving and Y.H. Song</i>		253
10.1	Introduction	253
10.1.1	Reactive Power and Voltage Control	253
10.1.2	Monitoring and Assessment of Voltage Security	254
10.1.3	Transition-optimised Reactive Power and Voltage Control	254
10.1.4	Voltage Security and Congestion Management	255
10.2	Reactive Power Markets and Pricing Mechanisms.....	255
10.2.1	Examples of Reactive Power Markets.....	255
10.2.1.1	England and Wales (UK).....	256
10.2.1.2	New York (USA).....	257
10.2.1.3	Australia	258
10.2.2	Analysis of Reactive Power Markets.....	259
10.3	Transition-optimised Reactive Power Control.....	260
10.3.1	Introduction	260
10.3.2	Algorithmic Procedure	261
10.3.2.1	Objective Function	261
10.3.2.2	Transition Constraints.....	262
10.3.2.3	Solution Algorithm	262
10.3.3	Case Studies	263
10.3.3.1	Case Study I.....	264
10.3.3.2	Case Study II	265
10.3.4	Concluding Remarks	266
10.4	Congestion Management and Voltage Security.....	267
10.4.1	Introduction	267
10.4.2	Nomenclature	267
10.4.3	Algorithmic Procedure	268
10.4.3.1	Mathematical Model.....	269
10.4.3.2	Computational Procedures.....	271
10.4.4	Computational Case Studies.....	273

10.4.5 Concluding Remarks	277
10.5 Acknowledgement	277
10.6 References	277
11. Load and Price Forecasting via Wavelet Transform and Neural Networks	
<i>I.K. Yu and Y.H. Song</i>	281
11.1 Load Forecasting and Conventional Techniques	282
11.1.1 Time-series Models	282
11.1.1.1 Auto-regressive (AR).....	283
11.1.1.2 Moving Averages (MA).....	284
11.1.1.3 Mixed Auto-regressive and Moving Average (ARMA).....	284
11.1.2 Regression Model.....	285
11.2 Novel Methods for Short-term Load Forecasting	286
11.2.1 Wavelet Transform Applications.....	287
11.2.1.1 Wavelet Transform Analysis	287
11.2.1.2 Load Forecasting Process by the Wavelet Transform.....	289
11.2.2 Kohonen-neural-network-based Approach.....	290
11.2.2.1 Architecture of the Kohonen Neural Network	291
11.2.2.2 Unsupervised Learning	292
11.2.3 STLF by a Composite Model	293
11.2.4 Case Studies and Analysis.....	294
11.2.4.1 Case Study by Wavelet-transform-based Model.....	294
11.2.4.1.1 Classification of the Daily Load Patterns.....	298
11.2.4.1.2 Numerical Results	299
11.3 Electricity Price and Modelling	301
11.3.1 Characteristics of the SMP	302
11.3.2 SMP Models	304
11.4 Forecasting the SMP	305
11.4.1 Neural-network-based Model	305
11.4.2 Wavelet-transform-based Model	306
11.4.3 Combined Model	306
11.4.3.1 Decomposing the SMP Data.....	307
11.4.3.2 Predicting the Approximation.....	307
11.4.3.3 Estimating the Detail	309
11.4.3.4 Summing the Approximation and the Details.....	310
11.4.4 Prediction Results and Analysis	310
11.4.4.1 Predictions Results by Neural-network-based Model.....	310
11.4.4.2 Predictions Results by Wavelet-transform-based Model	310
11.4.4.3 Predictions Results by Combined Model.....	312
11.5 Summary	313
11.6 References	314

12. Analysis of Generating Companies' Strategic Behaviour	
<i>A. Maiorano, Y.H. Song and M. Trovato</i>	317
12.1 The Electricity Marketplace	318
12.1.1 Auction Structures	318
12.1.1.1 Bundling of Demand into Lots	319
12.1.1.2 Sequencing of Auctions	321
12.1.1.3 Pricing Rule	321
12.2 Strategic Supply Functions	323
12.2.1 Supply Constraints	326
12.3 Linear Strategic Supply Functions	328
12.4 Proposed Model	330
12.4.1 Inverse Demand Function Evaluation	332
12.4.2 Presence of Private Contracts	333
12.4.3 Final Formulation of the Model	333
12.5 Case Studies and Results Analysis	337
12.6 Conclusions	343
12.7 References	344
13. Bidding Problems in Electricity Generation Markets	
<i>Y. He, Y.H. Song and X.F. Wang</i>	347
13.1 Generation Auction Markets in Electricity Markets	347
13.1.1 Auction Mechanism	347
13.1.1.1 Standard Auction Formats	347
13.1.1.2 Single-round Bidding and Multi-round Bidding	349
13.1.1.3 Simple Bids and Multi-part Bids	349
13.1.2 Existing Auction Mechanism: Trading Arrangement and Pricing Mechanism	350
13.1.2.1 UK Market	350
13.1.2.2 PETA [6][7]	350
13.1.2.3 NETA [8][9]	351
13.1.2.4 California [10]	352
13.1.2.5 PJM [11]	352
13.1.2.6 Nord Pool [13]	353
13.1.2.7 Australia National Electricity Market (NEM) [14]	354
13.1.2.8 New Zealand [3]	354
13.1.2.9 Ontario Electricity Market in Canada [2]	355
13.1.2.10 Summary	355
13.1.3 Market Power in Generation Auction Markets	355
13.1.4 Getting to Know Market Power	355
13.1.5 Measuring Market Power	357
13.1.5.1 Mitigating Market Power	358
13.1.6 Uncertainties and Risk Mitigation	359
13.1.6.1 Uncertainties in Electricity Markets	359
13.1.6.2 Risk Mitigation	360
13.2 Decision-making and Strategies in Generation Auction Markets	361
13.2.1 Overview of Decision-making	361
13.2.1.1 Decision-making, Model and Algorithm	361

13.2.1.2	Decision-making in Electricity Markets	363
13.2.1.3	Decision-making in Electricity Generation Market	364
13.2.2	Game Theory Applications in Generation Auction Market.....	365
13.2.2.1	Basic Concept of Game Theory and Its Application in Electricity Markets.....	365
13.2.2.2	Game-theory-based Bidding Strategies	366
13.2.3	Optimisation-based Approaches to making Bidding strategies making	367
13.2.3.1	Bidding decision-making by Optimisation- based Market Simulator	367
13.2.3.2	Optimal Bidding Based on Formulation of Market Prices with Generators' Behaviours Embedded.....	368
13.2.3.3	Application of Markov Decision Process (MDP) in Bidding Strategies.....	371
13.2.4	Other Methodologies for Decision-making	372
13.3	Study of Bidding Strategies Based on Bid Sensitivities in Pool-based Spot Markets	372
13.3.1	Introduction	372
13.3.2	Analysis of Bid Sensitivities Based on the IPOPF Model.....	373
13.3.3	Bidding Strategies Based on Bid Sensitivities.....	375
13.3.3.1	Description of the Proposed Model	375
13.3.3.2	Optimal Bids.....	376
13.3.3.3	Nash Equilibrium Process.....	378
13.3.4	Bidding Strategies when Considering Coalitions	379
13.3.4.1	Combinations of Potential Coalitions	379
13.3.4.2	The Bidding Process Considering Coalitions	379
13.3.4.3	Optimal Bids of Sub-Groups	380
13.3.5	Case Studies and Conclusions	384
13.3.5.1	Bid Sensitivities	384
13.3.5.2	Bidding Processes and Optimal Bids without Coalition	386
13.3.5.3	Results When Bidding under Coalition	388
13.3.5.4	Conclusions.....	390
13.4	Integrated Bidding Strategies with Optimal Response to the Probabilistic Local Marginal Prices.....	391
13.4.1	Introduction	391
13.4.2	The Proposed GencoBDS.....	391
13.4.3	Three Main Modules of GencoBDS.....	393
13.4.3.1	Security-constrained Probabilistic LMP Simulation Model.....	393
13.4.3.2	Self-scheduling Unit Commitment Model.....	395
13.4.3.3	MCDM Method for Optimal Offers	397
13.4.3.4	Bidding Decision-making Process.....	398
13.4.4	Test Results and Conclusions	399
13.4.4.1	Test Results.....	399
13.4.4.2	Conclusions.....	403
13.5	References.....	404

Appendix A: Notation Used in the Self-scheduling Unit	
Commitment Model Module	406
14. Transmission Services Improvement by FACTS Control	
<i>Y. Xiao, X. Wang, Y.H. Song and Y.Z. Sun</i>	407
14.1 FACTS Solutions to Power Flow Control	408
14.1.1 Concept of FACTS Technology	408
14.1.2 Models of FACTS Devices	409
14.1.2.1 Power Injection Model (PIM) of FACTS Devices for ATC Enhancement	410
14.1.2.2 PIM of Shunt Controller for Voltage Control	410
14.1.2.3 PIM of Series Controller for Line Flow Control	410
14.1.2.4 PIM of the Unified Controller for Power Flow Control	412
14.1.2.5 DC Model of TCSC and TCPS for FTR Auction	413
14.2 ATC Enhancement by FACTS Control	415
14.2.1 Formulated ATC Enhancement Model	418
14.2.1.1 Control Variables	418
14.2.1.2 Objective Function	418
14.2.1.3 Operating and Control Constraints	419
14.2.2 Implementation	421
14.2.3 Case Studies	422
14.2.3.1 Case 1: ATC Evaluation without FACTS Device	424
14.2.3.2 Case 2: ATC Enhancement with Control of SVC	425
14.2.3.3 Case 3: ATC Enhancement with Control of SVC+TCPS	428
14.2.3.4 Case 4: ATC Enhancement with Control of SVC+UPFC	428
14.2.4 Remarks	429
14.3 FTR Auction Improvement by FACTS Control	430
14.3.1 Proposed Optimal FTR Auction Model	430
14.3.2 Case Studies	432
14.3.2.1 System I: 8-bus Test System	432
14.3.2.2 System II: 30-bus Test System	434
14.3.2.3 Discussion	438
14.3.3 Remarks	439
14.4 References	439
Index	441

Operation of Market-oriented Power Systems

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