

Contents

1	Introduction	1
1.1	Distinguishing Between Cost and Price	1
1.2	Cost and Price in Our Daily Vocabulary	2
1.3	The Credibility of Cost	3
1.4	Total Cost of the Operation as a Whole	4
1.5	Joint-Product Costs	7
1.6	Price Relationships: The Baker Revisited— The Quantity Discount	11
1.7	The Economics of Fixed (Overhead) Costs	13
1.7.1	Production Within the Capability of Existing Plant	14
1.7.2	Where Plant Expansion Is Required	15
1.8	A Closer Look at Two-Part Pricing	17
1.9	Competitive Pricing (Value to the Purchaser)	18
1.10	From Wonderland to Reality	18
1.10.1	The Baker	19
1.10.2	The Utility	19
1.10.3	A Broader Horizon	20
1.10.4	Benefits vs. Costs	20
1.11	Cost and Price-A Primer	20
1.12	Conclusions, If Any	22
2	The Cost Approach to Pricing: The Direction of Cost	25
2.1	Preface	25
2.2	Fixed and Variable Costs	27
2.2.1	The “Readiness to Serve” Concept	28
2.2.2	The “Use of Service (Product)” Concept	29
2.2.3	Relative Proportion of Fixed and Variable Costs	29
2.3	Decreasing, Constant, and Increasing Costs Conditions	29
2.4	Decreasing Costs	30
2.4.1	The Static Hypothesis	30
2.4.2	The Dynamic Hypothesis	33
2.5	The Base System	34

2.6	Future Additions	37
2.6.1	Decreasing Fixed-Cost Scenario	38
2.6.2	Constant Fixed-Cost Scenario	40
2.6.3	Increasing Fixed-Cost Scenario	40
2.7	The Small Base-Load Plant	42
2.8	The Peaking or Firming-Up Plant	46
2.9	Power Purchases by Electric Utilities from Non-utility Sources, Bypass, and Discounts	50
2.9.1	Purchase by a Utility	50
2.9.2	Construction by the Utility of Its Own Plant	51
2.9.3	Purchase of IPP Power	51
2.9.4	Bypass of the Utility	53
2.9.5	An Alternative to Bypass: A Discounted Price	55
2.9.6	Arrested or Contracted Output	56
2.9.7	Summary of Findings	57
2.10	Variable Costs	59
2.10.1	The Dominance of Variable Costs	61
2.10.2	The Uncertainty of Variable Costs	61
2.10.3	High Capital/Low Operating Costs vs. Low Capital/High Operating Costs	62
2.11	Matters of Judgment	63
2.12	A Note on Generating Plants	66
2.13	A Note on the Level of Costs	66
3	The Cost Approach to Pricing: Joint Cost Allocations	69
3.1	Direct and Joint/Common Costs	69
3.2	Cost Causation	71
3.2.1	The Classification of Customers	71
3.2.2	The Classifications of Services	71
3.2.3	The Classification of Costs	71
3.3	Utility Cost Allocation Theory	73
3.4	The Functionalization of Costs	74
3.5	Methods of Allocation	74
3.5.1	The “Coincident Demand Peak-Responsibility” Method	74
3.5.2	The “Non-coincident Demand Peak-Responsibility” Method	76
3.5.3	Other Peak-Responsibility Methods	77
3.5.4	Various Other Methods	77
3.5.5	The “Phantom Customer” Method	78
3.5.6	The Nordin Proposal	78
3.5.7	Edison’s Improvements	79
3.6	Distribution	80
3.7	Rate Schedule Divisions of Cost	81
3.7.1	Demand Costs	81

3.7.2	Customer Costs	81
3.7.3	Commodity Costs	82
3.7.4	The "Perfect" Rate	82
3.8	Suballocations	82
3.9	The Total Cost and Incremental Cost Methods	83
3.9.1	Marginal Costs	84
3.9.2	Use of the Incremental Cost Method	84
3.10	The Separable Costs-Remaining Benefits Method of Cost Allocation in Federal Multi-purpose Projects	85
3.11	Limits on the Ascertainment of Costs	87
3.12	Definitions of Cost	89
4	The Cost Approach to Pricing: The Tenneco Pattern	93
4.1	Tenneco Pattern	93
4.2	The Issues	94
4.3	The Regulatory Scheme in Brief	95
4.4	Assignment of Fixed and Variable Costs	95
4.4.1	The Seaboard Formula	96
4.4.2	The United Formula	100
4.4.3	The Modified Fixed-Variable (MFV) Formula	100
4.4.4	The Straight Fixed-Variable (SFV) Formula	103
4.4.5	Comparison of the Formulae	104
4.5	The Demand Charge	105
4.6	Zoning	106
4.6.1	A "Postage-Stamp" Approach	107
4.6.2	The Zoning Alternatives	107
4.6.3	Which Alternative Is the Best?	108
4.6.4	The Legal Standards	108
4.6.5	The Commission's Appraisal Yardsticks	108
4.6.6	Commission Precedents	109
4.6.7	The Commission's Findings and Orders	109
4.7	A Resume	110
4.8	The Minimum Bill	111
4.9	Tenneco Allocations for Rate Design	112
4.9.1	Step 1: The Company-Wide Cost of Service	112
4.9.2	Step 2: Functionalization of the Cost of Service	113
4.9.3	Step 3: Classification of Functional Costs as Fixed or Variable	116
4.9.4	Step 4: Classification of Costs as Demand or Commodity	120
4.9.5	Step 5: Classification of Transmission Sector Costs	122
4.9.6	Step 6: Distance-Related Costs	122
4.9.7	Step 7: The New York Zone	125
4.9.8	Step 8: Per-Unit Rate Elements	125

4.9.9	Step 9: Total System Costs Revisited	128
4.9.10	Closing Reminders	130
5	The Value Approach to Pricing: Demand Influence	131
5.1	Preface	131
5.2	Value of Service Defined	131
5.3	Cost vs. Value in Juxtaposition	132
5.4	The “Upper and Lower Limit of Rates” Concept	133
5.5	Economic Demand	136
5.6	Direct and Derived Demand	136
5.7	Option Demand	136
5.8	The Price Elasticity of Demand	137
5.9	The Crucial Importance of Price Elasticity	139
5.9.1	Electric—Washington Public Power Supply System (WPPSS)	140
5.9.2	Gas—Producer-Pipeline Take-or-Pay Contracts	142
5.10	The Revenue Effects of Elasticity	143
5.11	Immediate, Short-Run and Long-Run Price Elasticities of Demand	146
5.12	Repression and Stimulation	147
5.13	The Principle of Diminishing Utility	148
5.14	Economics of Pricing on a Value of Service Basis	149
5.15	Monopoly Pricing	149
5.16	The Theory of Class Price	151
5.16.1	Price Differentiation	152
5.16.2	Reasonable Price Differences	152
5.16.3	Determination of Rate Classifications Under Value and Combined Cost-Value Approaches	155
5.16.4	Combined Value and Cost Bases	156
5.17	Bases of Rate Classes	157
5.18	The Cost and Value Approaches Compared	162
5.19	Unreasonable Discrimination	164
5.19.1	The FERC Lists	165
5.19.2	Statutory Prohibitions	165
5.20	Predatory Pricing	168
5.21	Is There a Problem?	169
5.22	Concluding Observations on Cost vs. Value	170
5.23	Marketing and Advertising	173
5.23.1	Civic Participation	173
5.23.2	Marketing	173
5.23.3	Giveaways	174
5.23.4	Advertising	175
6	The Value Approach to Pricing: Planning for Demand	177
6.1	Units of Measurement	177
6.2	Procedure	178

6.3	Planning: Short-Run Demand Forecasts	178
6.3.1	Natural Gas	179
6.3.2	Electric	179
6.3.3	Common Issues	179
6.4	Planning: Long-Range Demand Forecasts	180
6.4.1	The Purpose of the Forecast	182
6.4.2	The Strategic Plan	182
6.4.3	The Supply Forecast	183
6.4.4	Matching Supply and Demand	183
6.4.5	The Input Assumptions	184
6.4.6	Other Market Share Considerations	186
6.4.7	Availability and Reliability	186
6.4.8	Finally, the Factor of Governmental Policy	187
6.5	Final Results	187
6.5.1	The Single Forecast vs. a Range	188
6.5.2	The Components of the Forecast	189
6.5.3	Testing the Forecast	189
6.5.4	Reliance on Forecasts	191
6.6	Public Policy Forecasts	192
6.6.1	Errors in Public Policy	192
6.6.2	Omissions in Public Policy	193
6.7	Concluding Comments	193
6.7.1	Conflicting Forecasts	194
6.7.2	Guidelines	194
6.7.3	A Personal Note	195
6.7.4	Alternative Forecasts	195
6.7.5	Resolving Forecasting Conflicts	196
7	The Public Policy/Social Engineering Approach to Pricing	197
7.1	California's Lifeline/Baseline Rate	197
7.1.1	The California Lifeline Philosophy	198
7.1.2	The Lifeline/Baseline Rate Schedule	198
7.1.3	Pricing Procedure	200
7.2	Cost Components of Rates	202
7.3	Timed Pricing	203
7.3.1	Prior to 2000	203
7.3.2	Real-Time Pricing (RTP)	204
7.3.3	Now	204
7.4	The Color GREEN	205
7.4.1	Comparisons	206
7.4.2	Electric Utilities: Clean-Energy Programs	207
7.4.3	From the Printed Media	207
7.5	Venture into Marginal Cost Regulation	212
7.5.1	Marginal Cost Defined	213
7.5.2	The Steppingstone	213

7.5.3	The Proxy, a Combustion Turbine	214
7.5.4	Levelization Out, RECC In	214
7.5.5	EPMC Adopted, EDP Dropped	214
7.5.6	Energy Reliability Index (ERI) Established	215
7.5.7	Excess Generating Capacity and the ERI	215
7.5.8	The Resource Plan and the ERI	216
7.5.9	Long-Run vs. Short-Run and the ERI	216
7.5.10	The Capacity Response Ratio (CRR)	216
7.5.11	VOS In, ERI Out	216
7.5.12	The Abrupt Halt	216
7.6	Wind Rates on an Integrated Electric System	217
7.6.1	A Primer on Wind and the Electric Grid	217
7.6.2	Amount of Wind Generation	219
7.6.3	Wind and Planning	219
7.6.4	Planning: Wind Generators	219
7.6.5	Planning: Persistence Models	220
7.6.6	The Generation Reserves	221
7.6.7	Costs	222
7.6.8	Balancing Measures	223
7.6.9	Points of Contention	224
7.6.10	Services Offered	224
7.6.11	Rate Design	224
7.6.12	Physical Specifications	227
7.6.13	What's Left Out	227
8	Introduction to Rates	229
8.1	The Unregulated Marketplace	229
8.2	The Marketplace Under Regulation	230
8.3	The Customer Viewpoint	230
8.4	The Management Viewpoint	231
8.5	The Public Viewpoint	232
8.5.1	The California PUC	233
8.5.2	The Federal Energy Regulatory Commission	234
8.6	Related Objectives	236
8.7	Some Expert Opinions	236
8.8	Definitions	237
9	Elements of Rate Design	241
9.1	Frequent Features	241
9.1.1	Minimums	241
9.1.2	Ratchets	243
9.1.3	Adjustment Clauses	244
9.1.4	Penalties and Discounts	245
9.1.5	"Frozen" Rates	246
9.1.6	Caps and Floors	246
9.2	The "Blocking" Principle	247
9.3	"Postage Stamp" vs. Zone Rates	250

9.4	All-Purpose vs. Special-Purpose Rates: Unbundling	252
9.5	Seasonal vs. Year-Round Rates	254
9.6	Rolled-in vs. Incremental Pricing/Old Customer vs. New Customer Rates	254
9.7	Rate-Level Changes Across-the-Board	257
9.8	The “Fine-Print” Provisions	259
9.9	Nota Bene	260
10	Traditional Types of Rate Forms	261
10.1	Introduction	261
10.2	Rate Elements Defined Again	262
10.3	Single-Part Rate Forms	262
10.3.1	Flat Rates	262
10.3.2	Metered Commodity Rates (Also Called Straight-Line Commodity Rates)	264
10.3.3	Metered Demand Rates	265
10.3.4	Single-Part Rate Forms and Rate Theory	266
10.4	Two-Part Rate Forms	272
10.4.1	The Hopkinson Rate	272
10.4.2	The Wright Rate	279
10.4.3	Comparison of Hopkinson and Wright Rate Forms	281
10.4.4	Two-Part Rate Forms and Rate Theory	282
10.5	Three-Part Rate Forms	287
10.5.1	The Doherty Three-Part Rate	287
10.5.2	The Lester Special-Investment Three-Part Rate	288
10.5.3	The Zanoff Three-Part Gas Pipeline Rate	289
10.6	Modifications of Rate Forms and Special Applications	290
10.6.1	Promotional, Incentive-Type Rates	290
10.6.2	The Objective Rate	290
10.6.3	Additions to Standard Rate Forms	291
10.7	Miscellany	292
10.7.1	A 1946–1950 Case History with Overtones for Today	292
10.7.2	Rate Forms and Rate Comparisons	294
10.7.3	A 1971 Gas Distributor and Pipeline Tariff	295
10.7.4	Some Concluding Observations	299
11	Tools of the Trade	301
11.1	Introduction	301
11.2	Knowing the Market: Load Curves	302
11.2.1	Load/Demand Curve	302
11.2.2	Season Usage Patterns	303
11.2.3	Duration Curve	305
11.2.4	Planning	306
11.3	Gauging the Market: Analysis Factors	308
11.3.1	Diversity and Diversity Factor	309
11.3.2	Load Factor	315

11.4	Capacity Factor	321
11.5	Utilization Factor	322
11.6	Demand Factor	322
11.7	Power Factor	323
11.8	A Note to the Rate maker	324
12	Matters of Judgment	325
12.1	Part 1: Dubious Accounting	326
12.2	Earlier Accounting Results	326
12.3	Current Accounting Results	327
12.3.1	Overstatements	328
12.3.2	Understatements	328
12.3.3	Special Issues	329
12.3.4	Potpourri	330
12.3.5	Three Tidbits over 10 Years	331
12.3.6	Debt Concealment	332
12.3.7	At the Borderline	332
12.4	An Appraisal	333
12.5	Difference: Utility and General Corporate Accounting	333
12.5.1	Lack of Uniformity	334
12.5.2	The Question of Prudence	336
12.5.3	AFUDC	337
12.5.4	Deferred Income Taxes	338
12.6	Part 2: The California Energy Crisis	339
12.7	1996: Assembly Bill 1890	340
12.8	Optimism Reigns: No Doubts (1996)	341
12.9	The Lull Before the Storm (1997–1999)	342
12.9.1	FERC's Approval	343
12.9.2	Sales of California Generation Capacity	343
12.9.3	The California PX	344
12.9.4	Acquisitions of Generating Capacity Beyond California	345
12.9.5	Other Notes of the Majors	347
12.9.6	Rate Reduction Bonds	348
12.10	The Storm Hits: The Energy Crisis (2000–2001)	348
12.10.1	PG&E Corporation and Edison International	349
12.10.2	Other Activities of PG&E Corporation and Edison International	352
12.10.3	The Special Case of Sempra Energy, Parent of San Diego Gas and Electric Company	354
12.11	Chronology: The Crisis and Its Aftermath (to Early 2002)	356
12.11.1	November 1999	357
12.11.2	August 2000	357
12.11.3	January 2001	361
12.11.4	February 2002	382

12.12	Comments	389
12.12.1	The Fatal Contradiction	389
12.12.2	Regulatory and Economic Failures	390
12.12.3	The Divestiture of Generating Capacity by California Utilities	391
12.12.4	The Issue of Long-Term Contracts	392
12.12.5	The Uniform-Price Auction	393
12.12.6	The Neglect of Costs	393
12.13	From Storm to Turmoil	394
12.14	P.S. – 2009	394
12.14.1	Pacific Gas and Electric Company	394
12.14.2	Edison International	395
12.14.3	Sempra Energy	396
12.14.4	Statutory Changes	396
12.14.5	CPUC Actions	396
12.15	Part 3: The 2008–2009 Recession	397
12.16	Toxic Assets in Action: The Beginning	398
12.16.1	The Securitization Process in Detail	398
12.16.2	The CDS	399
12.16.3	The CMBS	399
12.16.4	A Bond Called Jupiter	400
12.17	Disregarded History	400
12.18	Earlier Bailouts	400
12.19	The Financial Crisis	400
12.20	The Bailouts	401
12.21	A Conducive Environment	402
12.22	Causes	403
12.23	The Dow from September 10 to October 10, 2008	404
12.24	The Paths of the Giants	404
12.25	Regulation	404
12.26	2008 Statistics	405
12.27	Epilogue	406
12.28	Acronyms and Definitions	406
Index		407