Index

A

active solar techniques 129
Activity Network Diagram (AND) 248
Alternating Current (AC) 173
Analytic Hierarchy Process (AHP) 65, 243-244
Artificial Neural Networks (ANN) 72
Avoided Costs 92, 94, 97, 161, 169, 182, 184-186, 196

B

Back Propagation (BP) neural networks 73
Benchmarking 3, 26, 31, 34, 44, 51, 57, 98, 139, 244-245
bioalcohol 129
biodiesel 129-130
bioethanol 129-130
biofuel 129-130
bio-mass 121-122, 124, 129-130, 133
biomethanol 129
Boston Consulting Group Matrix 237
brain pool - See Group Thinking Methods.
Building Energy Rating (BER) 88-89
Build-Lease-Operate-Transfer (BLOT) 208
Build-Lease-Transfer (BLT) 208
Build-Own-Operate (BOO) 207
Build-Own-Operate-Transfer (BOOT) 208
Buy-Build-Operate (BBO) 208

C

Capacitor Commutated Converters (CCC) 173
Capacity Margin (CM) 35
capacity resource planning 29
capital requirements 191, 201-202, 256
carbon emissions 18
Certified Emissions Reductions (CERs) 19
Clean Development Mechanism (CDM) 19
commercial loads 9, 21, 52, 55
Compact Fluorescent Lighting (CFL) 90
corporate planning 7-8, 10
cost-reflective tariff 222
Credit risk 201-202
creditworthiness 191, 203
Critical Peak Pricing (CPP) 216
Cumulative Expansion Costs (CEC) 154

D

daily load variation curve 9
Data Collection Methods
    focus groups 236-237, 239, 257-258
    interviews 236, 238, 257
    projective techniques 239
    questionaires 236, 238, 257
debt capital 203
Debt Service Coverage Ratio (DSCR) 205
decision support tools 237
decision theory 245-246
decision trees 237, 246, 257
demand consumption 53, 56
demand side alternatives 158, 168
demand side management 2, 14, 19, 22, 48-49, 51-52, 54-57, 84, 86, 99-100, 106, 108, 114, 120, 157
deregulation 13-16, 25-26, 29, 54, 59, 100, 206, 221
Design-Build (DB) 207
Design-Build-Finance-Operate (DBFO) 207
Design-Build-Operate-Maintain (DBOM) 208
distribution planning 11, 28, 31, 139
due diligence analysis 236, 241-242, 257

E

Economic analysis 193, 197-198, 210
Effective Load-Carrying Capability (ELCC) 36

electrical load forecasting 61-63, 68
electricity market structure 4, 16
electricity micro level 4
Electricity Regulatory Commission (ERC) 23, 92, 225
electricity restructuring reform 16-17
electricity sector 4, 14, 67, 92, 99, 103, 138, 162, 164-166, 213-215, 224, 232
electricity sub-sector 4, 6
electricity supply industry 14-18, 20, 22-23, 52, 54, 58-59, 99, 221, 224, 233
electricity tariff 4, 15-16, 22, 28, 48, 54, 59, 75, 93, 113, 119, 144, 202, 213-216, 218, 221-222, 224, 232-233
electric load 52-53, 55, 57, 68, 72-73, 77, 79-80, 147
electric power systems 8, 11-12, 45-46, 81, 142, 154, 181, 189-190
electromagnetic pollution 20
Emergency Operating Procedure Expectations (EOPE) 36
energy conservation 19, 22, 77, 98, 114, 120
energy consumption 31, 52-53, 56-58, 82-85, 92, 94, 97, 101, 109, 113-115, 119-120, 127-128, 140, 158, 214, 219, 222, 224, 232, 234
energy efficiency 2, 9, 14, 19, 22, 48-49, 51-54, 57-59, 82-88, 90-101, 106, 142, 156, 158, 164-166, 169, 218, 222, 232
energy efficient appliances 82-85, 91, 96-97
Energy Not Served (ENS) 34, 44
energy sector 4, 122, 158, 224
Energy Service Companies (ESCOs) 87
energy storage 21, 102
environmental externalities 156, 162-163
environmental pollution 4, 18, 20, 82-83, 95, 100, 105, 158, 160, 162-163, 168, 232
expansion planning 3, 27-28, 41, 45-46, 63, 80, 145-146, 150, 154-155, 158, 161, 167-168, 196
expansion studies 9, 27, 34, 41-42, 44, 51, 57, 143-144, 146, 149-151, 153-154
Expected Loss of Load (XLOL) 36
Expected Un-Served Energy (EUE) 36
export insurance 204
Extreme Day CPP (ED-CPP) 217
Extreme Day Pricing (EDP) 217

F

Feed-in-Tariff (FiT) 219-220
Financial analysis 7, 11, 193, 197-200
Firm Capacity Equivalent (FCE) 36
Flexible AC Transmission System (FACTS) 181
Flexible Utility Load shape 101
Forced Outage Rates (FOR) 42, 151
Foreign currency risk 201
fourteen principles of management 6
frequency stability 31, 33
Fuel prices risk 201
fuzzy logic systems 74

G

gallery method - See Group Thinking Methods.
Gap Analysis 237, 245, 257
GE Market Growth/Market Share Matrix 237
generation expansion planning 41, 45, 63, 145-146, 155
generation planning 9, 11, 28-30, 139, 145, 147
geothermal energy 127, 130-131
greenhouse gas emissions 18, 84, 136
green power 14, 124-126, 128, 134-136
green pricing 125, 134
grid interconnections 171-172, 178-179, 185, 187-188
grid stability 180-181
Group Thinking Methods
    6-3-5 method 237, 241
    brain pool 240
    brainstorming 240
    gallery method 240
    multi-dot voting 241
    nominal group 241

H

Harmonic distortion 39, 178
hydroelectric energy 128

I

Independent Power Producers (IPP) 138
Independent System Operator (ISO) 16
industrial loads 9
Integrated Resource Planning (IRP) 55, 156, 169
Interest Coverage Ratio (ICR) 205
Internal Electricity Market Directive 96/92/EC 16
Internal Rate of Return (IRR) 193
International Emissions Trading (IET) 19
Investment Costs (IC) 194

J

Joint Implementation (JI) 19

K

Kyoto Protocol 18-19, 136

L

large disturbance stability 32
Liquidity risk 201
Load Building 101, 103
load forecasting 2, 8, 29, 31, 51, 53, 57, 61-64, 67-68, 70, 72-81
load modeling 53, 58-59, 80
load research 2, 47-49, 51, 53-54, 56-60, 71, 76, 91, 103, 105, 234
Load Shifting 101, 106
Long Run Marginal Cost (LRMC) 164, 234
long-term load forecasting 62, 80
Loss of Energy Probability (LOEP) 36
Loss of Load Expectation (LOLE) 36, 42, 150
Loss of Load Probability (LOLP) 34-35, 44

M

Marginal Costs (LRMCs) 93
medium-term forecasting 62, 65, 76
Micro Combined Heat and Power (MCHP) 19
multi-dot voting - See Group Thinking Methods.
Multivariate Analysis (MVA) 244, 257

N

National Electric Power Company (NEPCO) 23, 41, 77, 93, 149
Net-Metering (NM) 219
Net Present Value (NPV) analysis 193
Net Working Capital (NWC) 200
nominal group - See Group Thinking Methods.

O

Operation and Maintenance Costs (OMC) 194
opinion polls 237

P

Particle Swarm Optimization (PSO) algorithm 75
passive solar techniques 128
Peak shaving/clipping 101, 105
Phasor Measurement Units (PMU) 37
planning criteria 2, 10, 27-30, 33-35, 41-45, 144, 146, 150, 154, 158, 160, 168
planning process 5, 27
planning tools 236
plant rehabilitation 19
POSDCORB 5
power contracts 11
power industry 1, 9, 20, 25, 29, 79, 124, 127, 171, 181, 191, 210-211, 213
power line failure 188
power line operation 187
power line security 187
Power Quality (PQ) 37
power supply industry 13, 24
power system expansion planning 27, 45, 145, 154
power system operation 11, 13
power system planning 1-2, 4, 8-11, 13, 26, 28, 45-46, 56, 59, 80, 98, 140, 143, 147-148, 155, 162, 169, 191, 236-237
Present Worth (PW) analysis 193
Price updating 186
Probability of Positive Margin (POPM) 36
Process Decision Program Chart (PDPC) 248
Public-Private Partnership (PPP) 13, 17, 191, 193, 206

R

Real Time Pricing (RTP) 217
regulatory incentives 146
regulatory requirements 11, 137
Renewable Energy (RE) 121
Reserve Margin (RM) 35, 42
residential loads 9
Revenue Requirements 225-226, 228-231
rotor-angle stability 31-32

S

short-term forecasting 62-63, 75, 77, 81
small signal stability 32
social tariff 221-222
solar energy 90, 121, 128, 130, 141, 196, 219
solar-thermal technologies 128
supply side options 92, 157-158, 161-162, 166-167, 169
Support Vector Machines (SVM) 74
SWOT analysis 237, 249

T

technical planning 7-8, 10, 172, 179
Third Party Access (TPA) 15
tidal energy 129, 140
Time-of-Use (TOU) tariff 216
Total Cost (TC) 195
Transmission and Distribution (T&D) system planning 9
transmission expansion 33, 143, 154-155
transmission network expansion planning 45, 145-146
transmission planning 11, 30-31, 33, 139, 146
transmission system operation 30
Transmission System Operator (TSO) 16
Trend Analysis 237, 245, 257

U

United Nations Framework Convention on Climate Change (UNFCCC) 18

V

Valley Filling 101, 103
very short-term forecasting 63
voltage stability 31-33, 180, 182

W

WASP (Wien Automatic System Planning Package) 148
water pollution 186
wind power 128, 133, 140