Abraham, Spencer, 180, 261
Adverse events, system response to, 263–68
AES Corporation, 124, 155
Alarcon, Richard, 236
Alpert, Deirdre, 142
Ancillary services, 49–50
Assembly Bill 1X (AB 1X), 242
Assembly Bill 29X (AB 29X), 196
Assembly Bill 995 (AB 995), 142
Assembly Bill 1890 (AB 1890), 1, 32–39, 81, 137, 143, 208; affected by legislation, 142–43; California Legislature and, 227; conservation, 195; creation of competition, 34; and demand-side management programs, 195; direct access to generator and, 241–42; energy efficiency, 195; price caps, 35–36; separation of generation and distribution, 33–34; stranded costs, 35–36
Assembly Joint Resolution No. 77, 141
Available capacity (ACAP) obligation on load-serving entities, 252–53
Bankruptcy, 172, 180; implications of, 177–78
Baseline Energy Outlook, 1998, 94
Baseline quantities and prices, 204–205
Baum, Stephen, 233
Bid caps, 214; defined, 212–13; exceptions to, 213; Bidding strategies, 40–44, 54–59; as-bid system, 42–44; normal commodities futures system, 41–42
Blackouts, 83, 131
Blue Book, 26–28; restructuring order of 1995, 31
Bonneville Power Administration (BPA), 14, 132, 155
BPA. See Bonneville Power Administration
Brulte, James, 32
Bryson, John, 186
Budget problems, 203
Burbank, city of, 155
Burton, John, 185
Byron, Sher, 142
CAISO. See California Independent System Operator
California Building Standards Commission, 196
California Conservation Corps, 196
California Consumer Power and Conservation Financial Authority. See State Power Authority
California Energy Commission, 34, 93, 94, 100, 101, 162, 163, 164, 196, 246
California Independent System Operator (CAISO), 37, 44–46, 82, 83, 127, 133, 140, 141, 154, 155, 168, 207, 209, 210, 211, 218, 246, 247–48, 251, 252, 253, 266, 268; alternatives to rolling blackouts, 168; and ancillary services markets, 48–49; billing, 215; change in bidding process, 211; change of leadership, 197–98; demand relief program (DRP), 168; and DWR, 198; and energy emergencies, 169–71, 216; governance, 210; influence on bidding strategies, 126–29; limitations of, 169; market redesign efforts (see “Market Design 2002”); and Participating Generator Agreements (PGAs), 212; payment policy, 198–99, 212; and PG&E, 175; and power exchange (PX) markets, 51–54; price caps, 129, 130–34; and real-time market, 47–48, 127, 155, 157; real-time price, 148–49; and rolling blackouts, 169; Tariff Amendment No. 33, 211–12; trading responsibilities of, 169; Web site, 45
California Large Energy Consumers Association (CLECA), 29
California Legislature policy framework, 192–99
California Manufacturers Association (CMA), 29
California Power Exchange (PX), 39–44, 141, 257–58
California Public Utilities Commission (CPUC), 11, 20, 21, 25–39, 61,
INDEX

82, 135, 140, 173, 197, 202, 203, 207, 218, 223, 226, 235, 261, 264, 277; alternative courses of action, 216–17; attitude toward investor-owned utilities, 174; contracts outside CAISO and PX, 135; implementation of Assembly Bill 1890, 64–65; implementation of PURPA, 17–18; and PG&E, 187–88; price cap, 133; restructuring Order of 1995, 30–32; restructured system, 128; and retail price increase, 179, 182; role in deregulation, 25–26; settlement with SEC, 186–87; sued by PG&E and SCE, 137–38
Calpine Corporation, 234, 236
Campbell, Ian, 278
Cavanagh, Ralph, 74
Claremont Colleges, 168
Clearing Up, 109
CLECA. See California Large Energy Consumers Association
CMA. See California Manufacturers Association
Coal, 90
Columbia River Power System, 14
Competition, 254–56; current access laws, 255; direct access, 255–56; direct access vs. sunk costs, 255; ensuring wholesale market, 254; for industrial markets, 254–55
Competition transition charge (CTC), 27–28; restructuring Order of 1995, regulation of, 31
Conservation, 195
Contreras-Sweet, Maria, 197, 210
Coral Power, 236
Corporate generators bidding strategies, 125–26
CPUC. See California Public Utilities Commission
Crow, Robert Thomas, 278
CTC. See Competition transition charge
Damage control price cap on CAISO markets, 253
Davis, Gray, 135, 138, 218, 228, 242, 243, 264, 274; advice to, 219–21; and CAISO, 210; on deregulation, 191–92, 278; electricity purchases and, 230; on FERC, 191; on generators, 190; lack of action, 174; on merchant generators, 132; on municipal utilities, 190; policy on wholesale price controls, 139–41, 142; power of appointment, 210; price caps, 133; public policy, 133; public relations campaign, 189–92; on retail price increase, 178, 185, 203; and SCE, 186; and Terry Winter, 134; support for investor-owned utilities, 174
Davis, Susan, 142
Day-ahead congestion management, 251
Decision 95–05–045, 28–29
Demand relief program (DRP), 168
Demand-side management programs, 195: conservation, 202; energy efficiency, 202
Department of Energy, 180
Department of Water Resources (DWR), 116, 134, 156, 197, 235; as dominant buyer of electricity, 155–57; electricity purchase, 181–84, 203; market power of, 155–57; nonpayments to generators, 198–99; and price discrimination, 156; as procurer of electricity for IOUs, 179; purchases, 190; revenue bonds, 184
Deregulation: Assembly Bill 1890 and, 38; California Public Utilities Commission and, 25–26; electricity deregulation, 2, 278–81; factors leading to, 18–19; in other countries, 24–25; price reduction and, 19–22; reasons for failure, 279–81; retail sales and, 24–25; stranded costs and, 22–24
Direct access: California Legislature and, 227; elimination of, 241–42; restoration of, 254–56
Divesting assets, 59–62
DRP. See Demand relief program
Duane, Timothy P., 247
Duke Energy, 155, 156
DWR. See Department of Water Resources
Dynergy, 155, 156, 236
Efficiency, 258–59
Electricity: consumption trends in California, 91–94; import of, 89–90, 95; interstate trade, 86–87; network restructuring, 100; production sources, 90, 98–99
Electricity contracts renegotiation, 272–73
Electricity crisis, 135, 176, 282–83; financial crisis and, 2; government response to, 2–3; pricing during and after, 256; system restructuring
and, 282. See also Western electricity crisis

Electricity demand: reductions, 164–66; responsiveness of, 263–66

Electricity generation: in California, 99–109; natural gas market and, 120–22

Electricity imports in California, 96–97, 109

Electricity Oversight Board (EOB), 141, 218

Electricity purchase contracts, long-term, 238–39

Electricity purchases; 223–44; Assembly Bill 1890 and, 227; direct access and, 227; Enron’s bankruptcy and, 277; financing purchases, 224–28; revenue bonds and, 226; short-term bridge loans and, 227; short-term payment deferral of, 225–26; sunk costs, 223–24, 239–41

Electricity regulation: contributions to financial crisis, 279–81; retail price control and, 280–81

Electricity Reports, 1996, 94

Electricity restructuring. See Deregulation

Electricity revenue bonds, 236–38

Electricity suppliers, 146

Electricity supply, capacity limitation of, 111–12

Electricity supply and demand, 151–66; and electricity imports and exports, 151–52; and the financial crisis, 153; and natural gas prices, 152–53

Electricity wholesale prices, volatility of, 83

Electric Power Fund, 237

Electric system, regional nature of, 245–46

Emission controls, 122–23

Emissions credits, 215

Energy conservation, 192; methods of, 166

Energy crisis, 171, 216; end of, 147; relative importance of market design, 249; as two crises, 145

Energy emergencies, 166–71, 201, 208, 211, 214, 215, 216; and public policy, 194; stages of, 167–68

Energy Information Administration, 246

Energy Infrastructure, 262

Energy Policy Act (EPACT), 17

Enron Corporation, 29, 30, 192; effect of bankruptcy, 277

EOB. See Electricity Oversight Board

EPACT. See Energy Policy Act

Executive Order D-19-01, 195

Federal Energy Regulatory Commission (FERC), 17, 37, 83, 133, 140, 141, 154, 160, 197, 210, 214, 236, 245, 247, 249, 272; approval of CAISO policy, 211; and CAISO, 82, 210–11; and CAISO tariff, 198–99; cooperation with the State, 218–19; and CPUC, 207–8; “creditworthiness adder” and, 199; decision making, 206; on energy crisis, 176–77; Enron investigation, 176–77, 277; on generator refunds, 200–201; hybrid auction system, 209, 212; ideological conflict with State of California, 189; impact of Orders, 216; incentives for generators and utilities, 208; investigation of off-line generators, 159–60; investigations, 205; jurisdiction, 139; market design, 82; and market design control, 206, 207; market manipulation, 213–14; market orders, 207–11; May and June orders, 161; Order broadening the scope of price mitigation, 214; penalties imposed by, 128–29; policy implementation, 206; policy response, 189; price caps, 215; and price controls, 191; price mitigation, 211–12; price mitigation Order, 212–14. See also Price caps; Regional transmission organizations

FERC. See Federal Energy Regulatory Commission

Financial challenge, causes of, 136–37


Financial losses: difficulties repaying, 226–27; responsibility for, 224–25

Financial management, 146

Financial obligations: management of, 272–75; paying for, 274–75

Financial risks, distribution of, 268–72

Finney, Tal, 197, 210

Firm transmission rights, 251

Fisher, Jolanka V., 247

“Flex Your Power” campaign, 195

Florio, Mike, 197, 210

Fluorescent light, 195

Fox, Vicente, 278

Freeman, S. David, 240, 242

Fuel supply infrastructure, 260–61
Generating plants, construction of, 101–3
Generation capacity, public policy and, 196–97
Generation and distribution, 30, 33–34
Generation and retail, 34
Generators, 190, 198, 200, 208; bid caps, 215; exercising market power, 159; market power, 111; new capacity, 161–64; off-line, 157–61; refunds, 200; repair and maintenance, 158–59, 160; subject to eminent domain, 192
Green electricity, 82
Guardino, Carl, 197, 210
Hall-Collins, Paula, 236
Hogan, William W., 29, 249–50, 278
Howle, Elaine, 233
Hydroelectric plants, 213
Hydropower: capacity of, 91; Colorado, 90
Increased retail prices, 117, 137
Independent Energy Producers (IEP), 29
Independent System Operator (ISO), 28, 82, 140
IEP. See Independent Energy Producers
Infrastructure, 260–62
Investor-owned utilities (IOUs), 7, 91, 117, 133, 136, 173, 174, 179, 193, 208, 217; and bankruptcy, 172; credit of, 175–76; creditworthiness, 220; financial crisis, 83; freed from PX and CAISO, 207; operation as monopoly, 11; recovery, 193; risks of restructuring, 66; versus other utilities, 173; and spot markets, 88–89
ISO. See Independent System Operator
Kahn, Michael, 197, 210, 218; analysis of electricity conditions, 138–39
Keeley, Fred, 210
Lack of competition, 82
LADWP. See Los Angeles Department of Water and Power
Lay, Kenneth, 192
Leadership failure, 144, 217, 221; by Governor Davis, 218
Lockyer, Bill, on Kenneth Lay, 192
Long-term fixed-price contracts, 268–72
Los Angeles Department of Water and Power (LADWP), 7, 11, 155
Los Angeles Times, 161, 211
Los Medanos Energy Center, 163
Lynch, Loretta, 218, 236; analysis of electricity conditions, 138–39
“Manifesto on the California Electricity Crisis,” 219, 220, 229
Market-clearing system, 40–44; complications with, 44–45
Market design, 82
“Market Design 2002,” 250–54, 266; available capacity (ACAP) obligation on load-serving entities, 252–53; damage control price cap on CAISO markets, 253; day-ahead congestion management, 251; firm transmission rights, 251; forward spot energy market, 251–52; real-time bid mitigation for local reliability needs, 252; real-time economic dispatch using full network model, 252; residual day-ahead unit commitment, 252; restructuring principles, 251
Market power, 159; of sellers, 157; shifts in, 155
Market restructuring, 249–54; available capacity (ACAP) obligation on load-serving entities, 252–53; CAISO’s redesign efforts, 250–54; CAISO’s restructuring principles, 251; damage control price cap on CAISO markets, 253; day-ahead congestion management, 251; firm transmission rights, 251; forward spot energy market, 251–52 (see also “Market Design 2002”); real-time bid mitigation for local reliability needs, 252; real-time economic dispatch using full network model, 252; residual day-ahead unit commitment, 252; under the restructured system, 71–78; spot market design principles, 249–50
Markets: as-bid system, 42–43; bidding strategies and, 55–57; in California, 249; CAISO real-time, 155; CAISO vs. PX, 51–54; commodities futures system, 41–42; ensuring competition, 234; improving pricing, 256–60; long-term contracts, 62–66; market-clearing system, 40–44; price caps and, 52–53; pricing in, 256; real-time monitor-
ing, 47–48; restructuring (see Market restructuring)
Memorandum of Understanding (MOU), 29–30
Metcalf energy center, 103
Mirant Corporation, 155, 156
Mixed market system, 88
Montali, Dennis, 187
MOU. See Memorandum of Understanding
Municipal utilities, 7, 78–79, 91, 115; operation as monopoly, 11
Nameplate capacity, sources of, 103
Natural gas prices, 135, 143, 152–53, 161, 165; in California, 90; demand for, 100; in the Pacific Northwest, 90
Net generation, measurement of, 89
Net imports, measurement of, 96
“Net short” electricity, 193
Nixon, Richard, 15
Northwest Regional Planning Council, 246
Nuclear power, 136
OPEC. See Organization of Petroleum Exporting Countries
Opportunity costs, 59
Order broadening the scope of price mitigation, 214
Order 800, 17
Order 2000. See Regional transmission organizations
Organization of Petroleum Exporting Countries (OPEC), 14–15
Pacific Gas and Electric (PG&E), 1, 7, 38, 135, 142, 172, 175, 180, 187, 203, 226; bankruptcy of, 172, 185–86, 199, 187, 223, 277; and CPUC, 200; financial short falls, 175; lawsuit against CPUC, 137–38; price rate structure, 204; reorganization, 187–88, 200
Participating Generator Agreements (PGAs), 212
Peace, Steve, 32–33, 142
Peakers, definition of, 100
Peyton, Carrie, 236
PGAs. See Participating Generator Agreements
PG&E. See Pacific Gas and Electric
PIER. See Public Interest Energy Research Program
PJM, 249
Policy decisions, need for information, 246
Policy issues, 245–75
Powerex Corporation, 156
Power exchange (PX), 30, 82, 83, 109, 125, 127, 129, 130, 135, 136, 141, 199, 208, 209, 218
Power Plant and Industrial Fuel Use Act, 15, 16
Prediction of usage, 44–48; load balancing, 49
Preferred Policy Decision. See California Public Utilities Commission; Restructuring Order of 1995
Price caps, 115, 118, 119, 126, 129, 131, 148, 149, 168, 215; bids and, 212–13; problems of, 132; soft, 134, 212
Price controls, 82, 111, 115, 121, 130–34, 139, 141, 142, 172, 188–89, 191, 193, 194, 202, 206, 208–9, 211; Assembly Bill 265 and, 142; bid caps and, 214–15; in bilateral sales, 214–15; CAISO and, 134; and effects on demand, 114–15; and energy emergencies, 215; FERC and, 129–30; impact on energy crisis, 216; problems with, 216; “soft,” 209; wholesale, 208
Price series: CAISO real-time price, 148; PX market, 147
Price spikes, 153; for electricity, 149; for natural gas, 152
Price wholesale electricity, 100
Pricing, 256–60; Assembly Bill 1890 and, 35–36; bidding strategies and, 55–57; crisis’s effects on, 238–39; deregulation and price reduction, 19–22; effects of post controls, 280–81; factors contributing to high prices, 18, 20; improving, 256–60; in retail markets, 256; market-clearing, 40–44; markets and, 51–54; options, 235–36; real-time, 257–60. See also Real-time pricing; Restructuring Order of 1995; Retail electricity, pricing; Retail price controls; Sunk costs; Wholesale electricity prices
Production sources of electricity in California, 98
Project Independence, 15
Proposition 9, 81, 109
Public Interest Energy Research Program (PIER), 32, 34
Public policy, 188–216, 218; the challenge period, 138–43; critique of, 216–21; and energy emergencies, 201;
of FERC, framework, 192–99; improving generation capacity, 196–97; increasing supplier's risk, 189, 197; omissions in, 194; and rolling blackouts, 201–2; of State of California, 188

Public Utility Regulatory Policies Act (PURPA), 15

PURPA. See Public Utility Regulatory Policies Act

PX. See Power exchange

PX market, 147–48, 149, 197, 207; bankruptcy, 147, 180; separation from CAISO, 168; trading responsibility of, 169; transparency of, 181

Qualified facilities (QFs): cash flow problems, 161; comments with IOUs, 193; nameplate capacity of, 103; off-line, 161; and PG&E, 175

“Rate relief.” See Retail price increase

Real-time bid mitigation, 252

Real-time economic dispatch, 252

Real-time pricing, 257–60, 266; difficulties of implementing, 259–60; systems of, 259; two-part, 259–60

RECLAIM. See Regional Clean Air Incentives Market

Regional Clean Air Incentives Market (RECLAIM): emissions limits of, 124–25; trading credit permits and, 122–23

Regional integration, 245–48

Regional transmission organizations (RTOs), 247–48; RTO West, 247

Regulatory changes, 17

Reno

Reno, Nevada, 12

Reno, Oregon, 12

Renewable electricity, market for, 18

Residual day-ahead unit commitment, 252

Restructured systems, retail markets in, 71–73; risk management in, 74

Restructuring: Assembly Bill 1890, 32–39; Blue Book, 26–28, 31; economic risks, 66–68; generation capacity risks, 68–70; market reorganization, 28–29; Memorandum of Understanding, 29–30; Yellow Book, 26

Restructuring Order of 1995, 30–32

Retail distribution, 12

Retail electricity, 24–25; advantages of, 25; competition in, 72–73; flexibility in, 220; in other countries, 24–25; pricing, 202; retail distribution, 12–13

Retail price controls, 84

Retail price increase, 179, 182, 185, 217–18; by CPUC, 202, 204–5; effect on demand, 202–3, 204; implications of, 178; opposition to, 202, 217–18; as proposed by Governor Davis, 204; treasury by CPUC, 203–4

Retail prices, 136

Riordan, Richard, 190

Risk: bearing, 66–68; generation capacity, 68–70; and long-term contracts, 232–33; management in the restructured retail market, 74–78; public policy and, 197–201

Risk management, 260–72; and construction of new plants, 267; and electricity demand responsiveness, 263–66; investment issues, 267; and regulated retail prices, 265–66; and response to adverse events, 263–68; and retail price controls, 264; and supply responsiveness, 267–68; and terrorist threats, 262

“Roadmap decision,” 32

Rolling blackouts, 166, 168, 170–71, 194, 201–2; as symbol of energy crisis, 171

Rosenfeld, Harvey, 81

RTO West, 247

Sacramento Municipal Utility District (SMUD), 7, 155

San Diego Gas and Electric (SDG&E), 7, 38, 81, 111, 137, 141, 206, 226, 279

SCE. See Southern California Edison

SDG&E. See San Diego Gas and Electric

SEC. See Securities and Exchange Commission

Securities and Exchange Commission (SEC), 175

Self-generated electricity, businesses and, 240–41

Sempra Energy Resources, 233, 236

Senate Bill 5X (SB 5X), 196

Senate Bill 6X (SB 6X), 242

Senate Bill 1194, 142

Senate Bill 1388, 142

Short-run supply function, 116: characteristics of, 112–13; effects of electricity imports, 113–14

SMUD. See Sacramento Municipal Utility District

South Coast Air Quality Management District, 122, 124

Southern California Edison (SCE), 1, 7, 29, 38, 135, 142, 159, 172, 175,
INDEX

180, 186, 203, 223, 226; bankruptcy of, 172, 186, 277; and financial short falls, 175; lawsuit against CPUC, 137–38; settlement with CPUC, 186, 199
Spot market, 87–89, 96; effects of supply and demand, 87; and long-term contracts, 88
Spot prices, effects on demand, 116
Standard & Poor's, 173, 174, 175
State of California, 83, 188, 197; bringing new plants on-line, 163; budget problems, 172; as buyer of electricity, 154, 220; and FERC, 200; generator refunds, 200–201; ideological conflict with FERC, 189; and IOUs, 185; legislature, 135, 142; price controls, 172; projected budget surplus, 181; public policy, 138–43, 188
State Power Authority, 228, 242–44, 267
State Treasury, 203; as cost bearer for power, 180
Stranded costs: Assembly Bill 1890 and, 35–36; Blue Book and, 27; calculation of, 27–28; causes of, 22–23; competition transition charge (CTC), 27–28; controlling, 62; measuring, 61; Memorandum of Understanding (MOU) and, 29–30; paying for, 23
Subsidies for electricity use, 172
Sunk costs, 239–41; direct access and, 241–42; effects on businesses of, 240–41
Sunrise Power, 162
Suppliers, 154, 197; accidents, 159; exercising market power, 154; refunds, 209; response to financial risk, 154; uncertainty of, 153–54
Supply/demand, 82, 84, 89–91; and wholesale prices, 116–19
Supply/demand information: current availability of, 246–47; need for, 246; ways to increase, 247
Supply responsiveness, 267–68
Sutter Power, 162
20/20 plan, 194
Tariff Amendment No. 33, 211–12
Terrorism, 262
Transmission capacity, 86
Transmission infrastructure, 261–62

University of California Berkeley, 219; and “Manifesto on the California Electricity Crisis,” 219–20
Usage projections, 231–32
U.S. General Accounting Office (GAO), review of FERC investigation, 160
U.S. Department of Energy, 89, 92, 246
Utilities, 190, 208; investor-owned, 145; Los Angeles Department of Water and Power, 148; municipal, 148; nonpayment to suppliers, 154
Utility Reform Network, 133
Utility Spotlight, 233
Vertical integration, 59–62; controlling, 60–61
Vogel, Nancy, 211
Wagner, Curtis L., Jr., 200
Wall Street Journal, 192
Water Code, Section 80110, 242
West coast electricity market, 114
Western electricity crisis, 145–71, 217; and financial crisis, 146; energy emergencies, 146–47
Western Governor's Association, 85, 247
Western Systems Coordinating Council (WSCC), 84, 89, 247
Wholesale electricity prices, 81, 82, 83, 87, 116, 137, 143, 146, 147–51, 197, 203, 217; and belief changes, 149–51; and businesses, 180–81; CAISO real-time price, 148–49; and consumers, 180–81; controls, 129–30, 133–34; downward pressure on, 161, 162, 164; FERC ruling and, 207; increases in, 109–29, 136; and off-line generators, 158, 159; for other Western states, 172; on the PX market, 147–48; preventing high, 36; regional breakdown, 149; risk of high, 36; and taxpayers, 180–81
Wholesale market, 83–84, 87; effects of supply and demand, 111
Williams Corporation, 155, 156, 236
Wilson, Pete, 32–33
Winter, Terry, 134, 211
Wright, Rod, 143
WSCC. See Western Systems Coordinating Council

Yellow Book, 26